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## ABSTRACT

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— Seabrook Esq  
Mr Ward Davis;  
Kind regards

**ACUTE HYDROCEPHALUS**

OR

**WATER IN THE HEAD.**



ACUTE HYDROCEPHALUS,  
OR  
WATER IN THE HEAD,

AN  
INFLAMMATORY DISEASE,

AND

CURABLE

EQUALLY AND BY THE SAME MEANS

WITH

OTHER DISEASES OF INFLAMMATION.

BY

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## C O N T E N T S.

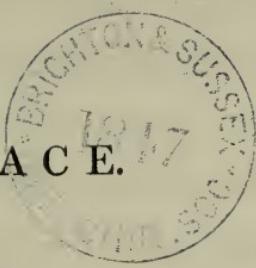
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P R E F A C E.



THE objects of the following pages, as professed in the title-page, are twofold. The first is to prove, that acute hydrocephalus, or water in the head, is an inflammatory disease; and the second, is to establish the fact that it is curable equally, and by the same means, with other diseases of inflammation. Diseases actually inflammatory are usually ascertainable, with more or less facility, by a competent investigation of the symptoms during life: others require the additional support of pathological investigations of morbid tissues after the death of their subjects. In order to be qualified to perform the latter duty with advantage, the pathologist should

be well informed of the changes to be anticipated in the appearance and diseased characters of the tissues injured or destroyed by the previous disease.

Acute hydrocephalus is presumed to be an inflammatory affection of the vessels of the brain and its investing membranes. If it really be so, the facts should be clearly demonstrable by the unquestionable evidence of morbid appearances and conditions of the tissues especially concerned, as being the seat and subjects of the previous disease.

Inflammations of the serous tissues of the brain in acute hydrocephalus should exhibit the ordinary results of inflammation of serous tissues in general, superadded to any results which might be attributable peculiarly to inflammation of those tissues themselves.

The constituency of the blood itself is ordinarily disturbed and deranged by the greater number, if not by all, diseases of inflammation; and the fact of an inflammatory disease is rarely ever doubted or disputed when

sustained by the appearance of a thick coat of lymph or fibrine presenting itself on the surface of blood obtained from subjects of acutely inflammatory affections by the ordinary operation of venesection.

In cases of inflammation of the vascular and membraneous tissues of the brain, the little volume now submitted to the reader will exhibit innumerable proofs of an analogous disorganization of the blood, as a result of an inflammatory condition of the tissues, which are the seat and subjects of acute hydrocephalus.

The results of the inflammatory changes in question are,

1. Injuries of texture of one or more of the investing membranes of the brain, consisting of opacities of their tissues and fibrinous attachments of one or more of those membranes to contiguous surfaces of immediately adjoining membranes.

2. An inflammatory transudation or secretion of coagulable lymph or fibrine, appearing

in the several forms of coatings, linings, and separate masses of fibrine deposited on the surfaces and within certain cavities of the brain.

3. Quantities of serum, sometimes effused upon the external surfaces of the brain, and presenting visibly in the spaces amongst its convolutions, and occasionally, but not frequently, interposed between certain other investing membranes of the cerebrum: this latter appearance is for the most part a result of violence from falls and other accidents.

4. Purulent matter, occasionally but not frequently forming a part of a case of acute hydrocephalus, complicated with an accidentally disordered condition of adjoining tissues; as of the tissues within the temporal bone, including perhaps the entire apparatus of the organ of hearing, bone and all.

5. The usual fluid contained within the chambers of the brain, which has given to the disease which forms the subject of this little volume the incorrect designation of

dropsy of the brain. This is a fluid *sui generis*, and is the produce exclusively of inflammation of the serous membranes investing the brain, and of the vascular tissues concerned in supplying the encephalon with blood. This is not blood, nor serum, nor purulent matter, nor fibrine; but a fluid, as already stated, *sui generis*: an infiltration from the mass of blood by the cephalic tissues already adverted to in a state of inflammation. Its constituents, as analyzed by Berzelius, are as follow:—

Albumen	...	...	...	...	1·66
Matter, soluble in alcohol with lactate	}	}	}	}	2·32
of Soda	...	...	...	...	
Chlorides of Potassium and Sodium	...				7·09
Soda	...	...	...	...	0·28
Animal Matter, insoluble in alcohol	...				0·26
Earthy Phosphates	...	...	...	...	0·09
Water	...	...	...	...	988·30
					100·

Berzelius concludes with observing, that the peculiar fluid of hydrocephalus may be considered as the serum of the blood having about the degree of dilution, which ordinary

serum would have if diluted with about seven times its volume of pure water. *Traité de Chimie*, t. vii. p. 141.

The above explanatory remarks addressed to the unlearned professional reader, if such a distinction may be admitted to exist, appears necessary to enable him thoroughly to comprehend the intention of my little volume. The non-professional reader will naturally determine his principal attention to the more practical points of the subject.

The manner of execution, together with the eventual practical results of the second object of the Work, that of establishing the curableness of hydrocephalus, equally and by the same means, with other diseases of inflammation, must be left to the silent influence of time, sanctioned by the decision of a liberal and educated profession

DAVID D. DAVIS.

17, Russell Place, Fitzroy Square.

July 22d 1840.



## ACUTE HYDROCEPHAEUS.

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### INTRODUCTION.

Introductory to the present Essay, I propose to present the reader with some brief historical notices of acute hydrocephalus, subsequently to its earliest recognition as a separate disease.

The recognition of acute hydrocephalus as a separate disease, and as distinguishable from all other febrile affections, was first made during the earlier part of the last century.

The first positive case of the malady, actually recognised as such, is to be found recorded in the third volume of the Edinburgh Medical Essays, published in the year 1733, in a communication from Mr. John Pasley, Surgeon, of Glasgow, entitled, "A Hydrocephalon, accompanied with remarkable symptoms."

The remarkable symptoms of Mr. Pasley's case were generally those which the more correct information of a subsequent period has usually recognised as the proper attributes of *hydrocephalus acutus internus*.

Mr. Pasley is, moreover, entitled to the credit of having possessed sufficient acumen of apprehension to have enabled him to appreciate the value and bearings of his case. He was therefore at once led to a practical extension and generalization of his subject; for in a passage annexed to this case, we are distinctly informed, that since the subject of the case in question had been under his care, he had seen several children who had complained of pain in one particular part of the head, with heaviness and drowsiness in their eyelids, the pulse much slower than natural, great aversion for food or drink, an inclination to vomit, with other symptoms similar to those under which his first patient had laboured. He adds two post-mortem examinations, which amply confirmed his opinion, that death had deprived him of his several patients, by the same fatal process of effusion into the ventricles of the brain.

The first professed essay on Hydrocephalus,

furnishing any evidence of its having been in any useful degree known to the writer himself, was published at Edinburgh in the year 1768, by Dr. Robert Whytt, then professor of medicine at the University of Edinburgh. As a first attempt to produce something of a pathological history of a malady which had never been described before (for Petit, in his very meagre contribution to the Academy of Sciences in Paris in the year 1718, cannot be admitted as a claimant to that honour), this monograph of Dr. Whytt's deserved, as it received, some credit, with the thinking part of the profession. As a complete picture, however, of acute hydrocephalus, as it has been since more accurately known and described, it proved in my opinion a signal failure, inasmuch as many of its essential phenomena were entirely omitted in Dr. Whytt's account of the disease, and many more were not made available for any purposes of practical treatment.

In the same year, papers were read on *hydrocephalus internus*, before a society of physicians in London, by Drs. Fothergill and Watson. Each of those gentlemen gave a brief history of the ordinary symptoms of acute hydrocephalus,

in strongly-marked outlines, of their respective cases ; and the latter, especially, has noticed a striking feature of the malady, which has since been very frequently omitted in more extended histories. “The head,” observes Dr. Fothergill, “is always hot from the first attack, and the *præcordia* likewise.” In the farther discussion of the subject, we shall see how much value we should attach to this very simple, but important observation of Dr. Fothergill. “The head is always hot from the first attack.” Here is a spark at least of life, but what became of it ? Why was it allowed to twinkle for a short period, and then to become extinguished ? We find the Doctor, in the same paper, express his utter want of power over the then ordinary progress and results of the malady. “At the same time I must own,” he says, “that it is not in my power to suggest any probable means of curing the disease of which I treat. It has baffled all my attempts, both when confided in alone and in consultation with the ablest of the faculty.” Drs. Fothergill’s and Watson’s papers are recorded in the fourth volume of the Medical Observations and Enquiries. Edit. 2, pp. 40 and 78.

In the year 1775, Dr. Dobson, of Liverpool, published a case of hydrocephalus, which he successfully treated by mercury. The case was reported in the sixth volume of the Medical Observations and Enquiries. The disease having proved fatal to three children of the family to which the patient belonged, he determined on this occasion to deviate from the beaten track, and was thus led to the exhibition of mercury, “from the expectation that it might enter into the course of the circulation, and reach the absorbents in the ventricles of the brain.” This case terminated favourably, and made a considerable impression on the minds of physicians.

On the use of mercury as a remedy for hydrocephalus, as introduced on this occasion by Dr. Dobson, Dr. Cheyne makes the following remarks :—“Antecedently to that period hydrocephalus was regarded as an incurable malady. But mercury, in consequence of the reports which were daily received of its great efficacy in many diseases incident to Europeans in the East-Indies, was beginning to be generally employed in England. Had Dr. Dobson never formed his hypothesis of its mode of operation it would have

found its way into prescriptions as a remedy for hydrocephalus. Dr. Lysons, of Bath, had already recommended it in continued fevers. Dr. Hamilton, of Lynn Regis, was using it in inflammations; Dr. Clarke, of Newcastle, in dysentery; and Dr. Haygarth, of Chester, who appears all his life to have been no less zealous for the improvement of his profession than benevolent in the application of his knowledge, had made trial of mercury even before Dr. Dobson, although the latter had the advantage of prior publication. Dr. Haygarth had been induced to prescribe it, in the hope that, by producing an *aqueous* evacuation from the neighbourhood, it might be a means of removing the fluid accumulated in the ventricles."

About this period it became a pretty general practice, with the more energetic physicians of this country, to prescribe opium and calomel in combination, as a means of subduing acute affections of different parts or organs of the body; but often without any uniformity of view, as to the manner by which the object was to be attained.

A similar remark applies to the use of blisters

to the head in hydrocephalus. See Dr. Foart Simmons's remarks suggested by the perusal of Dr. Percival's papers, in the 18th number of the Medical Commentaries. Medic. Comment. vol. v. pp. 174 and 415.

Up to this time we have no new or improved theory of hydrocephalus, no example of a stretch of thought beyond the antiquated notion that the effusion into the ventricles, in hydrocephalus, was the result of a state of laxity of the exhalants, or of a thin and watery condition of the blood : but in 1779, Dr. Charles Quin, profiting by some hints he received from his father, Dr. Henry Quin, a physician of eminence in Dublin, published in an inaugural dissertation, what the author himself entitled “A New Theory of Water in the Brain.”

In the illustration of his doctrine, he assumes for the proximate cause of effusion into the ventricles, a previous over-distension from an increased excitement, with a morbidly plethoric condition of the vascular tissues of the encephalon. It may be as well to give the substance of his theory in his own words. “Ex his itaque rebus patet in quibusdam casibus aquæ in ventriculos effusioni

ortum præbere sanguineam cerebri plethoram ; eodem fere modo quo peripneumonia et interdum asthmah hydrothoracis fiunt causæ. Etsi in animo quidem variam et mutabilem volvamus signorum seriem, quæ se in hydrocephalo acuto ostendunt, et quæ vix alio explicari possunt modo, libenterius forsan in sententiam ibimus, morbum istum quem jure acutum Whyttius, et post illum reliqui depinxerunt auctores, semper fere a statu tali capitatis plethorico initium capere.”

Then, in illustration of the increased force with which the blood is determined to the head, our author proceeds to notice some of its more immediate and striking effects.

“ Hinc etenim intelligere possumus cur oculi (sicut in febribus accidit ubi nimio versus cerebrum impetu sanguis propellitur stimulum nequeant pati ; hinc febris incipiente morbo causa in propatulo est ; et febris demum cursu absoluto, eo forsan tempore arteriarum pulsus tam vi quam frequentia languere incipiunt ; eo stupor instat ; quo aquæ effusione plethoram sanguineam excipiente, jam absit nimius sanguinis stimulus et vietantum mechanica cerebrum premat aqua.”

This briefly stated view of the theory of *hy-*

*drocephalus acutus internus* suggested to its author the following indications of treatment. “Curationis consilium (dum intra canales suos fluida cohibeantur) ad morbidam illam cerebri plethoram amovendam dirigi debet, quam pluri-  
ma veram morbi incipientis causam esse evincunt.”

“ Id efficiendum est

1. Sanguine detracto :
2. Datis Catharticis :
3. Vesicatoriis capiti appositis :
4. Setaceis juxta verticem immissis :
5. Capitis situ idoneo :
6. Frigore forsitan capiti admoto :
7. Adhibito pediluvio.” Thesaur. Medic.  
vol. iv. pp. 133 et sequentes.

Here we have a distinct annunciation of Dr. Quin’s new theory of hydrocephalus, as consisting when about to take place: 1st, in an increased determination of blood into the vascular tissues of the brain; 2d, in overfullness of those tissues in consequence, and, as an effect, of an increased force of action of the arteries which are employed to supply the brain with blood; and 3d, in an effusion, in result of the morbid overfullness, which the theory supposes, of an aqueous fluid into the brain.

These several states of overfulness of the vessels of the head, and increased excitement of the cerebral arteries, are represented as taking place in the midst of circumstances indicative of an inflammatory diathesis, and this fact is sustained, and afterwards fully proved by well-authenticated dissections.

Founded on these distinct views of the pathology of hydrocephalus, Dr. Quin, as we have seen, sought all his remedies in the resources of the antiphlogistic system ; and hence the apparent efficiency of the indications of treatment exhibited in the above series of measures, as recommended in his celebrated thesis of 1779. He may thus be said to have discerned his object at a distance with tolerable clearness ; but it cannot be denied that he wanted, either sufficient power of genius, or sufficient moral courage, to enable him to arrive at its full attainment : for even after a lapse of ten years, when he published a second edition of his Edinburgh theory, he found himself incapable of reporting more than two cases of hydrocephalus successfully treated ; and even those cases (in the proportion of 2 in 22) are given so unsatisfactorily, as to lead the reader to

no very favourable opinion of the physician's practical talents, although applied in illustration of his own published theory.

Dr. Quin may be represented as having perceived the dawn of his subject, which at an after period was destined to open into a more perfect day; but his feeble conception of it failed to place before his mind the prodigious accession of power over the issues of hydrocephalus, which his rare good fortune, or the more original sagacity of his father, had immediately placed within his reach.

The principal advantage derived by the profession from the writings of Dr. Charles Quin, was the satisfactory and decisive manner in which he connected the phenomena of hydrocephalus with an overfulness of the vascular tissues of the brain, founded on an inflammatory excess of arterial action. Although, therefore, we do not find that either of the Quins made their discovery available, in any great degree, towards an extension of their reputation as physicians, or of their power over the formidable malady which Dr. Charles Quin had made the subject of his inaugural dissertation

in 1779, we have nevertheless the satisfaction of knowing, that at no time subsequently to that period, has the attention of medical men been entirely withdrawn from the pathology of hydrocephalus first published and publicly maintained by that gentleman.

We find, accordingly, that Dr. Withering, in his account of the Fox-glove, published in 1785, informs his readers, that he had embraced an opinion relatively to the nature of hydrocephalus, similar to that held by Dr. Quin, which he had acted upon with success before the publication of Dr. Quin's thesis. Dr. Withering explicitly declares that the disease originates in inflammation, and that the water contained in the ventricles of the brain is the consequence, and not the cause, of the illness.

In an essay published by Dr. Rush, of Philadelphia, in the year 1793, and forming a part of that author's *Medical Inquiries and Observations*, Vol. ii. p. 201, that excellent physician professes to entertain similar opinions of the pathology of hydrocephalus with Dr. Charles Quin. "Having observed," he says, "for many years being unsuccessful in all cases, excepting two, of internal

dropsy of the brain which came under my care, I began to entertain doubts of the common theory of this disorder, and to suspect that, instead of being considered as an idiopathic dropsy, the effusion of water should be considered as the effect of a primary inflammation or congestion of blood in the brain. I mentioned this opinion to my colleague, Dr. Wistar, in the month of June 1788, and taught it the winter following in my lectures. The year afterwards I was confirmed in it, by hearing that the same idea had occurred to Dr. Quin. I have since read Dr. Quin's treatise on the dropsy of the brain with great pleasure, and consider it as the first dawn of light which has been shed upon the theory of this disorder."

Dr. Patterson, of Londonderry, published a work in Dublin, 1794, in the form of a series of letters to Dr. Quin, in which, although he criticises that author with severity, he adopts his views both as to his theory and much of his practice. In respect to the former, he thinks it nearly demonstrated, that acute hydrocephalus is an inflammatory disease, and that the watery effusion is the consequence of inflammation.

In an essay published in 1801 by Dr. Garnet,

in the fifth volume of the London Medical and Physical Journal, pp. 121 to 129, inclusive, that gentleman contends that hydrocephalus was the effect of, and accompanied by, a plethoric state of the vessels of the brain, occasioning a considerable degree of inflammation, and generally, though not always, producing an extravasation of watery fluid before death.

He finds his belief in the existence of an inflamed state of the vessels of the brain : 1st, on the appearance of the blood, which was as decidedly inflammatory as he ever observed it in pleurisy ; 2ndly, on the acuteness of the pain and fulness of the pulse ; and 3rdly, on the aggravation of the symptoms from the exhibition of stimulants, and the relief which always, in the first stage of the disease, attends the antiphlogistic plan ; and lastly, on the appearances seen on dissection.

In 1808, Dr. John Cheyne published in Edinburgh his first essay on acute hydrocephalus, with engravings. Dr. Cheyne's essays on the diseases of children, and this amongst the rest, were ushered into the world with some pretension, and received by the profession with no little indulgence and acceptance. Without going out of my

way to criticise his other works, Dr. Cheyne, in both of his essays on hydrocephalus, has fallen far short of what the profession might have expected from him, considering the vantage-ground on which he stood, in comparison with Dr. Quin and all the writers of the preceding century. We shall see in the sequel how the following passage, in reference to the greatest power we possess over hydrocephalus, may operate in enabling us to estimate Dr. Cheyne's merit as a practical writer on this subject.

" It must be admitted, that there are many cases of hydrocephalus in which blood-letting, although necessary in order to moderate the increased action of the vessels of the brain, and to prepare the abdominal viscera for mercurials, is contra-indicated by the diathesis of the patient, and by many of the symptoms of the disease; so that although we are constrained to begin with blood-letting, general or topical, we ought not to forget that blood-letting alone, even when employed early, is not to be relied upon for the cure of hydrocephalus. I do not mean to impugn the accuracy of Rush, who has affirmed that hydrocephalus may be cured by the lancet. Early venæ-

section may, perhaps, succeed in the cases in which the affection of the brain is primary.

“ Diseases are modified by climate. In Philadelphia venæsection may succeed better than in Edinburgh or Dublin. In the latter city, I have heard of a case in which blood-letting was successful; but I believe it has generally failed with others as well as with me.”

One case, the reader will be kind enough to remember, had taken place in Dublin, during or before the year 1808, in which the abstraction of blood had been successfully resorted to in the treatment of acute hydrocephalus. One wonders what could have induced the author, who had not even seen this one case, but only heard of it, to waste his time, in writing two books on the subject of hydrocephalus.

We are now advancing in our brief review towards a period in the history of hydrocephalus, when it will be proved that abstraction of blood has more than once cured hydrocephalus in climates very little inferior in severity to those of Edinburgh or Dublin.

In this short sketch of notices of the contributions to our stock of facts on the subject of hydro-

cephalus, by our modern, and especially recent writers, I am induced to speak very kindly and respectfully of a small volume on hydrocephalus, which was published by my late excellent friend Dr. Carmichael Smyth in the year 1814.

This little tract was composed at an antecedent period of the author's life, and during the full tide of his career as a physician ; but he adopted the theory of hydrocephalus of a still earlier period, namely that which was made fashionable by Dr. Robert Whytt,—a theory which even to the present day, amongst the older practitioners of our time, maintains its ground with no inconsiderable firmness. Dr. Smyth was, however, one of the latest public disciples of what we may call the old school of effusion from debility and relaxation of the vascular tissues of the head. If I am not mistaken, he fought the last battle in defence of its honour; and when we consider the utter poverty of his ammunition, both as to quantity and quality, it must be acknowledged that he fought it gallantly. Inasmuch, however, as we are about to devote several of the following pages to prove the unsoundness of the old theory and the unquestionable correctness of the theory opposed to that of

Dr. Carmichael Smyth, it will appear at once an act of justice to the memory of my late friend, as well as an apology for what I shall have hereafter to produce in opposition to his views, to quote from his own work the facts and statements which he has advanced in its favour.

“ It is generally allowed, that infants or children are, with few exceptions, the only persons liable to this complaint, and that children of either sex are equally so, with this difference, however, that females are sometimes attacked by the disease at a more advanced age than males. I do not recollect having seen a boy with the disease after nine years of age, but I have attended several females at twelve and thirteen, and one young lady, the daughter of a clergyman, in her twenty-first year. Children of a fine clear complexion, lively or sprightly disposition, having a peculiar softness of the muscular fibre, who are easily lowered by evacuations, and fatigued by exercise; those especially who are of a cold languid habit, where there is a feeble action of the heart and a want of vital energy, are, from what I have observed, more subject than others to this disease.

“ Children also seem more liable to be affected by

hydrocephalus during dentition than at any other period. An opinion has very generally prevailed, although, I am persuaded, without any foundation, that the complaint was connected with a particular shape of head. Scrofula has been mentioned by some as a predisposing cause, and I readily admit that the same predisposition is favourable to both diseases.

“ That this complaint has proved particularly frequent and fatal in certain families is a well known fact. The immediate cause of this unfortunate propensity may be difficult to explain, but, so far as it originates in constitution, we cannot be surprised to see the children of the same parents have a similar constitution, which naturally leads to similar diseases.

“ Sometimes children, apparently in the best health and spirits, are suddenly seized with the disease ; but in the greater number of cases its origin may be traced to bad nursing, improper food, hard water, dentition, and other debilitating causes, by which the child’s health and general strength have been impaired.

“ From the preceding account of the subjects, and predisposition to hydrocephalus, it is evident

that the disease is generally confined to infants and young childhood, and seems connected with the weakness of that time of life when the constitution, as is well known, has not yet attained that strength and vigour which it afterwards acquires ; and this connexion or relation farther appears from observing that females, naturally of a more delicate and lax habit than males, are longer subject to the complaint than the latter more robust sex.

“ The circumstances of predisposition are likewise such as lessen the powers and energies of life : and when the hydrocephalus occurs as a secondary complaint, the previous diseases are all of them remarkable for the weakness they induce, which is followed not only by dropsy in the brain, but by the same disease in other parts of the body.

“ As it appears, then, that the dropsy of the brain agrees in all the principal circumstances with the general character of the class, we are warranted in concluding that it has a similar origin, or must arise from the same causes which we have already proved to be either an obstruction to the return of the blood through the veins,

or weakness, general or local. The first is probably the cause in those instances of hydrocephalus, accompanied by a diseased organic structure of some portions of the brain adjoining the lateral ventricles ; but as examples of this are not frequent, we must look upon the other causes, namely, weakness, general or local, or both, as the usual source of the disease.

“ I have already endeavoured to prove by evidence, derived from our experience and observation of diseases, the only evidence the subject admits, that general weakness or debility is a frequent cause of dropsy ; this fact I consider to be so well established as not to be called in question by the most sceptical.

“ The case, however, is very different with respect to local debility, the existence of which, as a cause of dropsy, is not ascertained by the same evidence, but rather inferred from analogy, or assumed as a means of explaining the phenomena and appearances of the disease.

“ Fortunately, however, in the present instance, we are not under the necessity of having recourse to supposed or doubtful data ; as general weakness and the circumstances peculiar to the in-

fantine constitution are of themselves sufficient to explain the origin of the disease.

“ The brain and nervous system of children have more sensibility and irritability than those of adults ; for which reason they are more sensibly affected by impressions of every kind, they are more quickly lowered by evacuations, and sooner exhausted by fatigue.

“ The energy of the brain of a child depends chiefly on the vigorous action of the heart, and will be found to be in proportion to the action of the heart, and to the quantity and possibly also the quality of the blood sent to the head.

“ In all cases of general weakness, the heart is the part of the system first sensibly affected ; but from what has been above stated, every cause lessening the action of the heart, and rendering its contractions weaker or less frequent, must have an immediate and direct effect on the energy of the brain of a child : now as the action of the absorbent vessels is known to depend upon the energy and vigour of the part to which they belong, the lessening the energy of the part necessarily diminishes the action of the absorbents ; and as we know from experience, that their action can

be increased by the occasional excitement of stimuli or irritation, we have reason to conclude that their action is lessened by diminishing the natural exciting causes, and lowering the tone or energy of the part. But if this conclusion is just, and to me at least it appears to be so, the origin or formation of the disease can easily be traced to general weakness alone, combined with the peculiarities of the infantine constitution, without the aid of any local weakness, or other partial affection.

“ When we find those authors who consider the dropsy of the brain as an inflammatory disease recommending general bleeding or a liberal use of the lancet, whether we approve or disapprove of their practice, we must at least allow that it is consistent with their theory or opinion of the disease. But it is with some surprise that I observe Dr. Cheyne, whilst he combats their doctrines, recommending their practice ; for I cannot admit a difference in degree to be a difference in principle.

“ The practice of general bleeding, the debilitating effects of which, particularly to children, is well known, seems to me to accord very ill with

the account given by Dr. Cheyne of the subjects and predisposition to this disease.

“ One would hardly suppose that the author of the above observations (some observations by Dr. Cheyne not here quoted) would be an advocate for bleeding, or for any practice by which weakness could be increased. For my own part, I have never seen a case which seemed to require it.

“ The celebrated Whytt, who (I speak from personal knowledge) was no enemy to the lancet, observes, that in the fever accompanying the first stage of the hydrocephalus, though the pulse is often extremely frequent, it is rarely ever so full as to indicate bleeding ; and it does not appear that he employed this even as a means of relief, still less as a remedy for the disease.

“ Besides the collection of a fluid, with the sudden and placid appearance of the ventricles, the only unnatural circumstance that ever struck me was a number of red points observable on making a transverse section of either hemisphere of the brain ; which, in my opinion, are nothing more than the small veins of the brain gorged with blood, owing to the compression made by

the distended ventricles on the sinuses or larger veins ; but whether this conjecture is well or ill-founded, there is one thing of which I am confident, and am certain that every anatomist conversant in the dissection or examination of morbid bodies will agree with me, that neither the brain itself nor its membranes, in any case of genuine hydrocephalus that ever yet has been examined, showed any appearance of inflammation, or of the usual effects of this having taken place ; this remark I feel myself called upon to make, as several eminent men have entertained an opinion that the collection of fluid in the brain is always the consequence or effect of phrenitic inflammation. But the authority of no name, however respectable, can be put in the balance against the authority of facts and experience.”

But to proceed in our historical narrative. The subject of hydrocephalus was next taken up by Dr. Yeats, of Trinity College, Oxford, in a letter to Dr. Martin Wall, in the year 1815. In that letter Dr. Yeats urges the importance of early attention to the predisponent symptoms, which, he asserts, when understood, may be easily controlled,

but which, when not understood, neglected or overlooked, may end in the train of symptoms which form the groundwork of the future disease of water in the brain.

This tract, as already stated, was addressed to Dr. Martin Wall, clinical professor at Oxford. The learned author consulted all the previously existing materials on the subject, arranged them specially for his own purpose, finished his volume, added an appendix to it, and put it upon his shelf, where, with very little disturbance, it has remained ever since.

Up to the date at which we have now arrived, that of 1815, we have been travelling for nearly forty years in the wilderness, through a barren and unproductive country, beset with all sorts of doubts and difficulties, obscurities and disappointments; having no better light to enlighten our path than was shed over the very commencement of our journey by the tiny lamp of Dr. Charles Quin in 1779. In a far distant country there shone, indeed, a light of some fulgence, and it shone for some short time upon the subject before us. It once was called the "star of Philadelphia." The reader will readily apply

the metaphor to the late Dr. Rush of that city. We may, indeed, observe that Dr. Rush alone, of all his contemporaries, whether of the new world or of the old, fully comprehended the subject of treating hydrocephalus upon the principles of Dr. Charles Quin's theory.

We have next to notice the more recent work of Dr. Gölis, of Vienna. Of that work, its translator, the late Dr. Robert Gooch, speaks in the following terms of high commendation :

“With opportunities for observation which no other man ever enjoyed, he has written the best book I ever read on acute hydrocephalus.”

This is the last work, and at all events the most recent publication of any *practical value* that has appeared on the subject of hydrocephalus. In the sequel of the tract now about to be submitted to the acceptance of the reader, it will be made to appear, how far, and in what respects, the treatise of Dr. Gölis greatly exceeded in value all similar attempts of preceding writers ; and to what extent, and in what practical departments of the subject, any available room is yet left for any substantial improvements.



OF

A C U T E H Y D R O C E P H A L U S ;  
OR,  
WATER IN THE BRAIN.



THE disease known by the designation of dropsy of the brain is a fever of more or less intensity, accompanied, and proximately produced, by an increased determination of blood to the head; occasioning great turgescence of the vascular tissues of the brain, and its investing membranes; producing much arterial excitement and an excruciating pain of the head, and eventually terminating in effusion of an aqueo-serous fluid into the ventricles of the brain, accompanied occasionally by deposits of lymph upon the investing and lining membranes of the encephalon.

I do not propose to treat of all the varieties of hydrocephalus as distinguished, 1st, into external dropsy of the brain, or that form of it in

which the fluid is collected in the cellular substance between the scalp and pericranium ; or, 2ndly, when it is effused between the pericranium and the cranium ; or, 3rdly, when either of these external collections of fluid is found complicated and inter-communicating with fluids effused into the ventricles or interior chambers of the brain.

Nor do I intend to extend my attention to all the forms of internal dropsy of the head, as contradistinguished, 1stly, into that in which the effused fluid is found between the cranium and dura mater ; 2ndly, in which it is found between the dura mater and pia mater ; 3dly, in which it is found between the latter membrane and the brain ; and 4thly, in which it is found effused within the cavities of the brain itself. Of these several forms of internal hydrocephalus, the first is so rare that I have never seen an example of it ; the second and third are also of rare occurrence ; and when seen are found complicated with the fourth variety, or that in which the effused fluid is found effused into the several ventricles of the brain. The discussion of this form of hydrocephalus is what I chiefly propose as the subject matter of this little volume.

Although the acute hydrocephalus is a disease of uniform and unsuspended activity, and therefore of continued progressiveness from its commencement to its ordinary termination in death, *when not disturbed by the interposition of art*: it has, nevertheless, been deemed convenient to distribute it into stages and periods of various durations; as being severally remarkable for the prevalence of certain peculiarities or varieties of symptoms. Hence, writers give us long descriptions of predisponent symptoms, as constituting the period of formation of the disease. Then comes the period of the more active part of the attack, more or less distinctly marked as the season of an assemblage of many symptoms indicative of phlogosis and excitement.

This form and stage of the malady gradually wears itself out, and, sooner or later, precipitates its victim into a state of extreme hopelessness, as well as of the most pitiable but scarcely conscious misery.

When these artificial distributions of a continuous malady are employed with great caution, and for the exclusive purpose of marking with sufficient distinctness the outlines of a case, they

may be made very useful towards enabling the professional reader to form at once a comprehensive conception of the whole of the malady. With this explanation I propose to distribute the pathological history of acute hydrocephalus into three forms or assemblages of symptoms ; namely, 1st, the stage of formation of the disease ; 2d, the period of high phlogosis and fever ; and, 3d, the stage and state of extreme collapse ; of which the natural and most frequent termination, when not prevented by art, is in death. This distribution of the disease into successive forms and periods, has furnished opportunities for inaccurate observers and loose illogical writers to ramble into vague generalizations, and to confound the proper symptoms of hydrocephalus with certain diseased conditions of remote organs. In illustration of this statement, I would here notice a practice which very much prevailed about thirty and forty years ago, of referring predisponent tendencies to various diseases to certain morbid conditions or functional imperfections of the organs of digestion. The period alluded to was about the time when Drs. Cheyne and Yates published their respective tracts on hydrocephalus. That

was accordingly a time when the professional press of this country too much abounded with the generalizations complained of, to the neglect or exclusion of inferences from facts founded on severe pathological investigations. A pompous writer of the period in question states, perhaps truly enough, that many of the symptoms which constitute the disease called hydrocephalus, occur in children who have worms in the primæ viæ ; and the diagnosis, between the remittent or abdominal fever of children, and hydrocephalus acutus is in many cases difficult and doubtful.

“ There is hardly,” he says, “ a symptom of hydrocephalus which may not also be observed to occur in cases of the infantile abdominal fever, accompanied or not, as it may be, by the presence of worms in the intestines : and it is rather by a nice attention to the series and consecution of the symptoms, and to their mode of progress generally, than by an exclusive attention to any one of them, that we can truly establish the diagnostic differences amongst these several diseases. Besides, in many cases of hydrocephalus, the approach of the disease is insidi-

ous: its decided and characteristic symptoms being often preceded by a cachexia referable to disordered actions of the chylopoietic viscera, rather than to any actually diseased action of the head itself. In hydrocephalus, the bowels are often remarkably torpid and the alvine discharges characteristically unnatural. In pseudo-hydrocephalic cases, experience has fully established the advantage of active purgatives, and of medicines specially calculated to excite the liver and other chylopoietic organs to more natural secretions. Cases, too, of hydrocephalus, or cases at least so similar in all their symptoms to those which characterize fatal and undoubted cases of that disease, have now and then yielded to, and terminated favourably by a similar mode of treatment. The authority of Dr. Hamilton, the author of "*Observations on the Utility and Administration of Purgative Medicines*" will, it is presumed, be generally admitted as excellent evidence of this important fact.

Dr. Hamilton's work, the first edition of which was published in 1805, was soon followed by the second part of Mr. Abernethy's "*Surgical Observations*." Both these publications contain

many facts, which demonstrate the great advantage to be obtained in the treatment of sundry formidable diseases by remedies calculated to effect an improved condition of the functions of digestion ; and some of the cases referred to show that even acute hydrocephalus comes within the sphere of this practice, in common with a large proportion of the diseases of childhood generally ; but it is to Dr. Cheyne alone, that we are indebted for a distinctly pronounced opinion, “ that the *origin* of hydrocephalus is in many instances to be found in the *abdominal viscera.*”

It is a matter of pretty easy inference, that if the functions of digestion be not easily performed (and it requires no extraordinary sagacity to discover the fact), that some other important organs of the living system will sooner or later become disturbed and deranged in their actions.

That abdominal diseases will be produced by imperfect and morbid actions of the chylopoietic organs, and that these again will in their turn occasion obstructions and infarctions of sundry vascular tissues, and thus become productive of dangerous determinations of blood to the head, to the lungs, and other important organs, there

can be no doubt; but they do not constitute the diseases of those organs, nor should they be mistaken for even the first stages of such maladies. Suspended action of so large and important an organ as the liver, or an impeded circulation of the vascular tissues and glands of the mesentery, may frequently be supposed to operate as a predisposing cause of morbid determinations of blood to the head, to the organs within the chest, and to other parts; and that such obstructions may terminate in inflammations, suppurations, and effusions of various forms and names, according to the nature of the tissues invaded or seriously damaged in their functions, is sufficiently probable. All this indeed may happen; but it should never furnish ground for an accurate pathologist to confound the predisponent causes of a disease with the disease itself.

OF THE PHENOMENA OF THE FORMATIVE STAGE  
OF HYDROCEPHALUS.

Having premised the above explanation, I proceed to call the reader's attention to a succinct enumeration of the symptoms of the first, or formative stage, of hydrocephalus. This is a period

of some amount of indisposition, and of a general condition of the functions which is felt to be not that of full health. An infant, or the subject of hydrocephalus of whatever age, is observed to lose his spirits and his cheerfulness, to lose his taste and his eagerness for his ordinary occupations ; the healthful fulness and polish of the countenance assumes a reduced and shrunk appearance ; its complexion betrays a diminished action of its vascular circulation, and its colour fades from its ordinary hue of health and strength into a livid dingy paleness ; the eye loses its lustre, and the muscles their active power and elasticity. This may be designated the chill or cold stage of the invading fever,—the creeping coldness, rather perhaps than the rigor which ushers in the first attack. The pulse at this period will probably, therefore, present an uncertain character, both as to power and frequency; to which will be added, most probably in both respects, some degree of irregularity. As the extreme vessels on the surface of the skin become shrunk and contracted, the mass of blood is determined to the interior organs of the body, and in cases of head affections, to the vascular tissues of the

brain. Hence, a sense of coldness of the integuments of the face and head is speedily followed by a headache of more or less intensity. This sometimes continues to be a most distressing affection during the whole of the disease. There is now not only an overfullness of the vessels of the head, but also, as easily ascertainable in the greater number of cases, an increased heat of the whole or of certain parts of it. In a majority of cases, the forehead is most frequently the principal seat of this excess of temperature; but in some other cases I have known the occiput or certain lateral regions of the head to be chiefly affected. Loss of appetite, alternating with occasional sickness and vomiting, usually supervenes very speedily after the invasion of the malady; the loss of tone of the stomach taking place contemporaneously with the suspended or enfeebled actions of other parts of the living system. From this time forward a headache of more or less intensity, together with a positive increment of temperature of some parts or of the whole of the head, will become permanent and established symptoms. These symptoms are the result, no doubt, of great turgescence of the ves-

sels of the head added to an inflammatory condition of the same tissues. With these symptoms of an approaching transition from the formative stage of the malady to that of full phlogosis and high-toned tempestuousness of acute hydrocephalus, there are yet some doubtful symptoms, incident to the period of transition to the subsequent stage of the disease, which I have yet to notice : such are, a remarkable indifference to the occupations and pleasures of ordinary health ; alternations of temperature of remote parts, as of the lower extremities as far even as the soles of the feet ; aching pains of the nape of the neck, the scapular regions of the back and shoulders ; pain sometimes of the spinal muscles, including frequently those of the hips and loins.

The turgescence of the vessels of the head, incident to this period of the malady, is accompanied by a sense of giddiness often expressly complained of by children of four or five years of age and upwards, and pretty intelligibly indicated by younger children by their constantly rubbing the occipital part of the head against the pillow, and by frequent attempts to apply their hands to that part of the head, accompa-

nied by a whining expression, at once of pain and impatience. The pulse of this period is one usually of considerable inequality. Deviating, perhaps, rather slightly from its natural frequency, it is found on an attentive examination for several strokes together, to beat more feebly and not unfrequently to intermit altogether. At this period of vascular turgescence, with perhaps, an incipiently inflammatory excitement, the surface of the body is alternately hot and cold; the colour of the face changes, it being now suffused with transient flushings, and anon subdued and shrunk into a deadly paleness. Gölis asserts that, about this period of the disease, there are occasional remissions from intense suffering; and the patient, during these moments of comparative relief, will sometimes answer the question, whether anything ails him, by an indifferent “No.”

The patient during the formative period of his malady is seldom disposed or capable of indulging in any bodily exertion; but when he does make attempts to walk from place to place, his gait is often laborious and without proper equipoise or firmness. In stepping he may be observed to raise his foot as if he was stepping over a thresh-

hold : he totters and staggers as if inebriated. This fact is noticed by many writers.

Such are the appearances which in the greater number of children commonly precede or accompany the establishment of the stage of turgescence of hydrocephalus, and they more or less forcibly strike the attention of the practitioner, according to the cause of the disease and the constitution of the patient. Many of the foregoing symptoms, it is true, are the forerunners of other diseases ; but a careful consideration of all the connected circumstances, and of the great frequency of acute hydrocephalus, will serve to guide the physician to a correct diagnosis. In weakly and badly nursed children, in scrofulous, ricketty, or otherwise constitutionally diseased subjects, sufferers from difficult and dangerous dentition, the first advances of this insidious and destructive disease are frequently overlooked ; and Gölis, not a little to his honour, makes the following honest statement :—“ I speak here from manifold experience, and willingly confess that not only in my early years I have often overlooked the commencing moment of acute hydrocephalus, but that even now, under the above

circumstances, I am often unable to distinguish the symptoms of turgescence from those of the previous constitutional ailments alluded to ; especially if I have not known the patient some time before, and am compelled to form my diagnosis from what the bystanders relate concerning the progress of the malady."

The following passage from the work of the same accomplished writer presents to us a beautiful specimen of close and accurate observation of symptoms, under circumstances of some uncertainty as to the origin of the disease :

" Indifference succeeding to increased sensibility and irritability ; a constipated state of the bowels after habitual diarrhoea ; a scanty secretion from the kidneys, or an unusually yellow urine, with or without sediment ; dryness of the skin, which, previously to the accession of the disease perspired on the slightest exercise, or on eating or drinking, and particularly during sleep ; sleep without medicine occurring suddenly in restless children ; remarkable gravity and earnestness which had never been previously noticed ; these symptoms, taken together with those already mentioned, are indications by which the commence-

ment of the stage of turgescence of hydrocephalus may, with great probable correctness, be suspected."

Equally, or even more difficult, is it to distinguish the formative stage of this disease in very young infants of from one to four months old ; inasmuch as children of this tender age eject the contents of their stomach with great facility, even when in good health ; become soporose from a slight overloading of the stomach ; and their pulse, from trifling indigestion, or even in apparently good health, sometimes deviates from its natural regularity.

Sleeplessness ; unusually continued screaming, with a throwing back of the head and spine ; panting almost to breathlessness during paroxysms of screaming and passion, and hanging down of the head exhausted and drooping after such attacks ; alarm on the gentlest touch ; increased sensibility of the eyes to strong light ; an excessive quickness of hearing, and a consequent liability of being easily disturbed out of sleep ; diminished appetite both for food and drink ; intolerance of all movements of the body ; frequent application of the hand to the back of the head, and an occasional pulling of the nape of the neck

with the same hand ; lying on one side of the head in bed with the head retracted, not depending on any previous trick or habit ; a scanty secretion of urine having its colour of a deeper hue than common ; absence of all audible flatulence ; increased heat of the head and especially of the forehead and upper part of the nape of the neck. These symptoms, with an attentive observation of the manner and actions of the patient, with due reference to, and allowance for, prevailing diseases, added to a practical acquaintance with the proper attributes of hydrocephalus under its several modifications of age, temperament and condition of the parents in society, will best guide the practitioner to a probably correct diagnosis of the disease about to become established in the cerebral system.

Such, however, is the ordinary mode of approach of hydrocephalus, such are the symptoms of its formative stage, or that of its period of turgescence, as designated by Dr. Gölis. It is the most frequent variety of its accession ; it is the most dangerous to the patient ; and upon the whole there is reason to fear that it is the least reflective of credit on the sagacity and resources of the physician.

The least frequent mode of approach of hydrocephalus is that of which the formative stage is of the shortest duration. Its objects are generally the healthiest and liveliest children. Its symptoms of the cold stage are those of creeping chillness of the legs, thighs, and loins ; a great sense of lassitude and languor ; giddiness, with an appearance of confusion bordering on an expression of want of capacity ; pain and great stiffness of the neck, and pain of the back of the head ; a sudden accession of sickness, with an inclination to vomit, without any known or manifest cause ; a full, hard, and slow pulse, now and then interrupted by several unequal and irregular strokes of the artery ; sensibility of the eyes to feeble light ; singing in the ears, with much disturbance of the organ of hearing from slight causes.

After these symptoms of overfulness of the vascular tissues of the brain, symptoms which indicate the state and stage of turgescence, shall have existed for a period of brief duration, the patient becomes the subject, often very suddenly, of a violent febrile excitement, not unfrequently accompanied by frightful convulsions.

These alarming indications of an affection of the head are far more calculated than those which we have previously described, to excite in the relatives and bystanders the requisite anxiety and sense of danger that are found sufficient to induce them, without hesitation or loss of time, to ensure an early attendance of their physician.

If the practitioner is called in proper time to this manifest expression of encephalitis, and he employs the necessary remedies with activity, the effusion is much more easily prevented or arrested than under the form of a milder variety of the formative stage of hydrocephalus, or that which I must request the reader to identify with the period of turgescence of Gölis. By an early and active interference of art under the circumstances of this bolder and less disguised form of the malady, a greater number of sufferers who are attacked by the disease are happily rescued from premature death than under the opposite circumstances.

But if the physician has not a clear view of the disease, I am happy in being able to make this statement in the language of the Vienna physician. "If he does not apply the necessary reme-

dies with overwhelming power, there follows, in some few cases, after two or three days, but most commonly after the lapse of only a few hours, the moment of effusion, which may be recognized by its characteristic symptoms, and which is soon followed by the stage of palsy, in which the patient is irresistibly lost."

The duration of the formative stage, or the period of turgescence, is sometimes only that of a few hours; but in some cases it extends to eight, ten, fourteen, or even many more days.

We now proceed to attempt a pathological history of the second, or inflammatory period of this horrible disease. In the more insidious and subdued form of the malady the diagnosis is more difficult; and mistakes are more frequently fallen into when it is most important that practical misconceptions should be avoided; that is, during the very commencement of the malady.

#### OF THE SECOND, OR INFLAMMATORY PERIOD OF ACUTE HYDROCEPHALUS.

Here the signs of turgescence, or simply of plethoric excitement, are lost in those of a phrenetic and encephalitic state of some or all of the

tissues within the skull ; for here I have no hesitation in declaring my full belief, that in all cases of acute hydrocephalus, the brain and its envelopes become the subjects of inflammation, of more or less intensity. In support of this fact, I shall not forget, in the sequel of this little work, to furnish irrefragable proofs. At the period of transition from the stage of turgescence to that of direct inflammation of the important organs within the skull, the patient complains, in stronger language than heretofore, of intense pain in the forehead immediately over the eyebrows, occasioning a sense of severe pressure upon the eyes themselves.

These acute encephalitic affections are sometimes known to alternate with spasmotic pain of the lower intestines, or with pains in the limbs, or with spastic rigidities and distressingly painful affections of the nape of the neck, and its strong muscular connexions with the occiput. All these pains are much more intensely violent than during the formative stage of hydrocephalus. In a certain proportion of cases these pains are comparatively slight ; and this is a reason why physicians have sometimes doubted the existence

of local inflammation of the brain and its envelopes. For the miserable victims, tortured beyond measure by the distressing symptoms of a malady now rapidly progressing, there is no place on which they can lie still, and no friend, however near or dear, to whom they can confidently look for help ; the eye shrinks from light, and forthwith retreats, acutely irritated, into its socket, where it remains shaded and in part protected till the dusk of the evening. The head is hot to the hand, as are also the forehead and, in many cases, the nape of the neck. This increment of heat, of at least some part of the head, is, I believe a never absent symptom of this stage of hydrocephalus, although neither this nor any other part of the surface of the body appears inflamed or visibly turgid.

Excepting in some of the worst forms of the inflammatory periods of hydrocephalus, in which the albuginea is streaked with blood, and the inner surface of the eyelid is commonly inflamed ; excepting also in a case of complication with a febrile eruption, or with a chronic inflammation of the eye, it is a fact, I believe, that these parts are generally, if not always pale. It is only in

the first of the above conditions that convulsively trembling movements of the eye are ordinarily observed during this stage of the disease. The carotid arteries are both seen and felt to pulsate strongly; and the ruddy countenance, which only a few days before was round and plump, begins to assume the aspect of a squalid paleness, and in some few cases, by reason of a partial œdema, a mis-shapen and distorted appearance.

Amidst the rapidly increasing intensity of the symptoms at about this time, accurate observers have generally recognised a great change in the features and complexion, in the voice and movements, of the patient, as well as in the actions, sentiments, and temper of the subjects of acute hydrocephalus. In short they form a class of patients distinguishable for a miserably pitiable and characteristic physiognomy. “I reckon these changes in the features and appearance among the physiognomic indications of hydrocephalus.” Gölis. The nose is always dry; the lips, formerly of a rosy hue, now present the complexion of a faint dark red, and moreover fissured by reason of their dryness; the tongue, which at first was clean, now becomes covered with a white or

brownish yellow fur ; thirst and appetite for food are easily appeased or entirely cease, excepting in one form of the malady, during the inflammatory stage of the disease, which seizes its victim in a tempest of symptoms called by Gölis "the tumultuous accession of hydrocephalus." On the contrary, the stomach is often disturbed by nausea and retchings to vomit ; the contents of the stomach being rejected four or six times in twenty-four hours. But these vomitings become less and less frequent as the disease advances to its next subsequent stage, or, as sometimes happens, ceases entirely. When it continues, it is principally aggravated on the patient attempting to move or sit up in bed. The power of digestion, which even in the formative stage of the disease had become much diminished, commonly ceases altogether during this stage of inflammation. Food taken many days before often passes undigested, unhealthy both as to its appearance and *sætor* ; consisting of much unhealthy looking mucus, admingled with a great quantity of viscid and vitiated bile. In the *tumultuous accession* of this disease some patients are constantly chewing. At length the breath begins to be tainted

by a very sickly, offensive odour. Pressure on the pit of the stomach occasions much tenderness. The abdomen, which may be tumid at the beginning of the malady, subsides surprisingly in its progress, even without any increased evacuation from the bowels. The falling of the abdomen may indeed be considered as one of the pathognomic indications of acute hydrocephalus.

The bowels often remain obstinately constipated in spite of active purgatives and also of injections. The stools are gluey, most commonly brown, sometimes of a clay colour, and at other times of a yellowish green. During the use of calomel, green indeed, in all its several shades, is the predominant colour. The motions also are for the most part slimy and fœtid. Flatus scarcely ever passes, excepting under the most tumultuous forms of the disease ; especially in that remarkable variety of it to which Gölis and other German writers have given the name of *wasser schlag*, or water stroke, which also is that presumed by Dr. Charles Quin to have been the apoplexia hydrocephalica of Cullen.

The urine is always scanty, and voided with pain. At the beginning it is generally turbid

and white ; but in the following stages its hue is that of whitish yellow with a heavy slimy deposit. If at this period of the disease this sediment should form, the urine will nevertheless remain turbid, and will affect the smell but slightly ; but soon after it runs into the putrid fermentation, and it will then affect the olfactories more sensibly.

The sense of hearing now becomes more acute, and loud sounds more painful.

A constant moan, with complaints of pain in the stomach and abdomen, at the nape of the neck, and the occipital region of the head, excite in the attendants the most heartfelt anxiety and pity. The nights are for the most part sleepless, or else the sleep is exceedingly disturbed. Children during this stage of hydrocephalus may be observed frequently to grind their teeth ; they dream much, and cry out loudly and suddenly in their dreams. At this time they are much given to sleeping ; and it is only to pressing questions that they are willing to give answers, and then only monosyllabically or in a few words. Their movements are languid and constrained ; they sit up with difficulty to drink, or for other

purposes ; and they cannot keep long in a sitting posture without support, and without its being followed by nausea and vomiting.

The pulse is now become slow, unequal, and intermitting. During the slow pulsations one often feels a feeble intermediate stroke ; and if the patient should awake suddenly, in a fright or a dream, or during the moment of a violent pain in the head or any other part, the pulse instantly rises to double the rate of its previous frequency. A pulse of considerable slowness may be assumed as the ordinary pulse of an advanced period of the second stage of hydrocephalus, and may, therefore, be looked upon as a good practical pathognomonic sign of that stage of the malady.

The skin, which a short time before was moderately well stretched and tense, becomes flaccid, dry, and of a dingy colour. It is about this time, also, that an eruption sometimes manifests itself about the nape of the neck and shoulders. This eruption has been considered by some writers as especially characteristic of the second stage of hydrocephalus ; but we also meet with it, with almost equal frequency, during the stage of effusion and palsy. The patients now commonly lie on one

side or the other indifferently ; the hand on which they lie is placed under the head ; the other hand, with the arm outstretched, lies along the side, but it is often moved forwards and upwards towards the head ; but only to remain there for a few moments, until chased by some new form of pain or irritation, to seek relief in a new position by a sudden effort of painful restlessness or of unproductive exertion.

When an infant awakes from its slumbers, it wants to be placed in a new position on the mother's knee, or in the nurse's arm ; and then again, it almost immediately expresses a wish to go to its bed or cot. It seeks, in short, a change in every direction, but is everywhere disappointed ; and is forced to seek new changes, with similar results of speedy renewals of pains, with no substantial improvement of circumstances from any alterations or alternations of position.

#### OF THE THIRD STAGE OF ACUTE HYDROCEPHALUS, OR OF THE PERIOD OF EFFUSION AND PALSY.

I consider this period of effusion as really identified with the last stage of hydrocephalus, which terminates in palsy and death ; there being

no good reason, in my opinion, for separating the terrible symptoms of an advanced period of the malady, from the miserable remnants of life which are usually attendant on the still more frightful horrors of the dying state. The description of this stage is given so faithfully to truth and nature by the learned Gölis, that I feel disposed to ask the reader's permission to adopt his descriptive delineation of it, with a few such changes in the phraseology of that estimable writer as may be necessary to adapt his account of the disorder to the associations of the English reader.

Most of the symptoms of the preceding stage, after having continued for a certain number of hours, or more frequently for several days, and in some few cases even for weeks, become greatly exasperated. The little patients can no longer remain out of bed, nor sit upright, even when supported by others ; and much less are they able to stand : and the restless desire for a frequent change of posture now ceases. They no longer desire to go from the mother to the nurse, and then to the mother again. They become willing to lie tolerably quiet in one bed, and principally in

one attitude, placing themselves in an oblique position, with the head towards the right when they had to lie on the right side, and with the feet to the left ; and inversely when they lie on the left side. But the most common posture in this stage is on the back ; and in this attitude the patients with both feet are constantly kicking the bed-clothes. When lying on the back, and especially in that position, they draw up one leg so as to make the heel approach the nates, the knee being nearly upright ; they then swing the limb thus bent to right and left, and after a time stretch it out at full length. While making these movements with one of the legs, they are apt to move the arm of the same side towards the head, then to the mouth, and then to the nostril ; which they pick sometimes so roughly as to make the nose bleed.

The tones which in this stage of the malady they attempt to utter, and the few broken words which they would express, but are half forgotten in the delivery, are for the most part pronounced very slowly, with great difficulty and effort, and, by reason of obstructions in the nasal passages, very unmelodiously. The fingers are frequently

carried into the ears, which, from the trembling of the hand, they cannot often reach or find. They frequently catch at an eye, as if they would pluck it out of its socket ; or, as in some other cases, they pull themselves by the hair with reckless and useless violence.

Their lips are often dry and fissured, and thus furnish for the fingers and the teeth a constant occupation in attempts to effect the entire separation and removal of such dried and broken remnants of integuments.

All the external senses, except that of hearing, which during the early part of this stage of the disease is often very quick, become dull and almost annihilated.

The sensibility of the eyes, which in a former stage was morbidly raised, becomes reduced to a great degree of dulness : their parallelism is injured, and their focus distorted, their oblique glance being directed downwards. The pupils at this time are usually widely dilated, and the eyes themselves almost motionless, or oscillating without object or regular direction, but very insensible to the action of even strong light. Their sight is weak and deceptive. Objects held be-

fore them are perceived indistinctly, and are often seen double or at a remote distance.

The patients at this period sigh deeply, and moan piteously. When roused out of a state of seeming reverie they, from time to time, open their eyes widely, and again shut them closely ; and they repeat this opening and shutting of the eyes for several minutes. A gloomy earnestness is at the same time painted in their flushed countenances, accompanied by a petulant daring expression, but more frequently by that of utter distress and despair. This scene is again soon shifted and succeeded by a short interval of quiet ; which, however, is almost immediately broken by a return of the former moanings and complainings. A curious contrast is thus presented of patience with fierceness and wild intolerance of intense suffering. The wretched subject of the disease in the meantime becomes wasted to a skeleton ; his shrunk and flabby skin hanging loosely on his emaciated legs without vital softness, except where here and there partial sweats take place in succession or alternation with the previous partial creeping chills, which had perhaps but a few moments before preceded them.

The urine having much of the same character as during the former stage, now begins to be voided unconsciously.

An action of the bowels seldom follows even large doses of calomel without the aid of injections. In consistence, and in some other respects, the alvine discharges are often tolerably natural in their character ; while at other times they exhibit great varieties of consistence as well as of constituent materials. Sometimes they are soft and yeasty, or pap like ; at other times they are morbidly green as to their colour, admingled with portions, perhaps, of lighter colour, but approaching to fluidity of consistence. In a few cases the secretions are of a dirty grey hue, or of too light a brown ; but at other times they are of a blackish colour and putridly offensive. Diarrhœa without purgatives is of rare appearance ; and when it has occurred, the produce has generally been green, watery, and slimy ; and then the attempts to expel the fœces have often been attended with great pain.

The action of the heart and arteries during the wear and tear of this stage of the malady becomes

subject to more and more of irregularity and weakness.

In the progress of the disease the respiration becomes more frequently interrupted by sighs, the breath more offensively sickly and foetid ; the general weakness in the mean time advancing in rapid progression.

The patient is at length overtaken by extreme drowsiness, moaning unconsciously, and grinding his teeth ; after which he soon sinks into a state of complete coma. The last tragic scene is now rapidly approaching : but it now and then happens that the little sufferer awakes again to some degree of consciousness, and is able once more to take food and drink without vomiting ; which however at this stage of the malady is of very rare occurrence. During this occasional and very remarkable interval, patients sometimes ask and crave for food, swallow with eagerness, long for their play-things, cheer their fond mother and sometimes also the inexperienced and less cautious physician, with false hopes, which are too soon dissipated for ever : the former symptoms soon returning to be more extremely violent than before, to renew their direful work of

torture, and gradually to prepare their victim for the last struggle. Dr. Gölis illustrates the fact of this temporary improvement, this brief reprieve from the approaching pangs of the dying scene, by the following case.

“A child four years old, after having for many days spoken unintelligibly through the nose, not known his mother and other attendants, and not appearing to see objects held up to him ; called upon his mother and maid distinctly by their names, asked for his horse and whip, supported himself in a half sitting posture in bed, and ate some panada with relish : but after a lapse of three hours he fell into his former soporose state, attended by palsy of one side with spinal cramp and convulsions ; and after the lapse of six hours he expired.”

Another case is added by the same gentleman, for the purpose of illustrating a similar result, in the person of a professor’s daughter of five years old, who, in the progress of the stage of palsy, recovered so far as to have appeared in all respects restored to health, after having passed through the previous stages of turgescence and inflammation, and through two days of the stage

of effusion, recovered her full consciousness, regained her sight and speech, swallowed food and drink; her pulse became equal and free from intermission; her skin transpirable; the contents of her bladder were voided in large quantities; the stools were figured; the sleep was good; the breathing was easy, uniform, and natural. All the secretions and excretions were in a healthy and natural state, and, in short, all the circumstances, in deduction from the prosperity and good promises of the case which were presented, were, that the little patient felt great languor; that she could not move her hands and feet without difficulty, and that she was unable to hold up her head. "This case," observes Dr. Gölis, "made me for some time distrust my prognostic, which, however, I had not concealed, that in the state of effusion and palsy the recovery of the patient is universally impossible. A relapse, however, after a reprieve of forty-eight hours, was followed speedily by death, too certainly indeed in the end to confirm the unfavourable opinion which I had given at the beginning to the parties interested."

I have now to add to the foregoing description of what Dr. Gölis, in common with some

other authors, has called the third stage of hydrocephalus, an account of some of the extreme symptoms consequent on effusion into the ventricles of the brain.

The phenomena here to be enumerated are convulsions, followed by palsy, most commonly of the right side, with strong contractions of the posterior spinal muscles, and especially those of the neck, in consequence of which the head is drawn backwards and downwards, accompanied, not unfrequently, by a frightful distortion of the features. These convulsive distortions, whether of the muscles of the face, or whether of those of the spine, or, lastly, of those of the extremities, do not usually cease excepting with the death of the subject. A violent fever follows this last exertion of nature, by which, perhaps, she makes a vain effort to remove the cause of death, the fluid now lodged in the interior of the brain. A deadly sweat trickles from the head; a hectic redness succeeds and alternates with a mortal paleness of the disfigured countenance of the patient.

The sight having been for ever extinguished, the pupil, in the midst of convulsions and distor-

tions of the eye, arrives at its greatest degree of dilatation. The pupil, it should be observed, even at this latter stage of existence, becomes occasionally, although but very seldom, spasmodically contracted. It always, however, remains immovable, and insensible to the strongest light. The albuginea is blood shot, and the tarsus, in the greater proportion of cases, is lined with a yellow mucus. The palsied eyelid permits a substance to drop from its mucous membrane, which appears to ooze from every part of its surface and to cause the eye itself to project more and more from the deeply-sunken socket.

The hearing, hitherto so quick, becomes gradually dull.

Swallowing becomes very much impeded, partly from palsy of the muscles of the throat, and partly in consequence of the spinal cramp, which has the effect of carrying the head downwards and backwards, and therefore of interfering with the direct line of the pharynx and æsophagus : at length it becomes impossible. Nevertheless, the little sufferers have, even in this stage, some moments during which they can swallow fluids ; but at every drop which, in this palsied state, they

make attempts to swallow, their nerveless hand trembles.

They pass their urine unconsciously, in small quantities, and but seldom. It is, as in the former period, of a deep yellow colour, charged with a white sediment.

Their evacuations by stool now become comparatively unfrequent ; the motions being sometimes green, sometimes dark brown, sometimes soft, sometimes firm and slimy, but never foetid.

The tough mucus falls over the posterior nares into the throat, irritating the fauces, so as to excite a sense of suffocation, even to the point of vomiting, but without being attended with that effect.

From one or the other nostril, there often flow, before dissolution, a few drops of blood.

In many of the subjects of this disease, the ends of the fingers become blood red, and afterwards, on the immediate approach of death, pale. The pulse becomes exceedingly frequent, and still more intermitting and irregular than in the former stage, and so exceedingly feeble as to be almost imperceptible. The breath becomes short, quick, and gradually cold. The feet are fre-

quently observed to be somewhat swollen before death. The natural warmth of the limbs, already considerably diminished, ceases; whilst that of the head is sometimes observed to be increased. The spasms, which draw the head backwards, and cause the unpalsied arm to be applied closely against the side of the body, cease only with life. The heart still makes some tremulous movements; and the patient still breathes, rattling with open mouth. Frightful distortions disfigure the countenance; and thus, after divers horrible sufferings, the pitiable victims of this malady are withdrawn from their miseries: some at a late period of the first week, others in the second week, and the rest in the advancing progress of the third or even fourth week, worn and wasted to little more than skeletons."

#### OF THE DIAGNOSIS OF ACUTE HYDROCEPHALUS.

##### PATHOGNOMONIC SYMPTOMS OF THE FIRST STAGE.

It is a generally prevailing opinion that the diagnosis of this disease is attended with great difficulty, even to physicians of ample experience. This difficulty is supposed to arise from this

malady having many of its worst symptoms in common with some other severe diseases, and partly because its symptoms are often veiled under the mask of a previously existing pyrexia. The practitioner who holds the life of a child entrusted to his care under such responsible circumstances should feel it his bounden duty to inquire into the early and doubtful symptoms of his case with much minuteness and pains taking. Some of the minuter symptoms of the precursory stage will often prove in the sequel of the greatest importance, as indications of the actual disease that is to follow. Among such symptoms may be enumerated a gradual loss of spirits, loss or diminution of appetite, dulness of the eye, irritableness of the temper, sleepiness of young infants during the commencement of the fever of dentition, an observable change in the complexion and expression of the countenance, and perhaps beyond all other peculiarities of expression, a settled and immovable gravity.

The fact of the great frequency of head affections in children should always be present to the mind of a physician during his first visits, as well as another fact of nearly equal importance, namely,

the great tendency of all pyrexial diseases of very young children to occasion overfulness in the vascular tissues of the brain.

The medical attendant should moreover direct his most anxious attention to the succession of the symptoms, and neither write his prescriptions nor absolutely conclude upon his diagnosis without taking the utmost pains to make himself master of all the existing symptoms, and of their relative consecution and bearing on each other, as well as of their combined influence on the whole case. Before he retires after paying his first visit, he should put himself in possession of all the pathognomonic symptoms of his case : in short, it should include a study of the principal circumstances incident to the advent, development, and increment of the several symptoms, in the order of their origin and progress. He should indeed be competent by his discretion and adroitness to learn many facts from the friends and relatives of his little patient, from his professional brethren in previous attendance, and sometimes even from casual visitors. He might thus learn many circumstances of great importance during even the commencement of the malady, which he might not be able to arrive at by any sagacity

of his own, or closeness of observation of the patients themselves. It would be useful for a young physician to keep by him, or to consult a well painted picture of the disease, which would faithfully call up to his recollection the several phenomena of the malady as they most frequently occur in the consecution of the ordinary stages of the malady, as they have already been placed before the reader.

Among the most important symptoms indicative of the stage of turgescence is perhaps a slight giddiness, with a momentary confusion in consequence of all quick movements of the head; aching pains of the hands and feet, such as have been proposed by some writers to be identified with rheumatic pains of the same part; similar pains of the nape of the neck; disturbed and unrefreshing sleep, occasionally interrupted by talking or muttering; diminished relish for food and drink, with or without other gastric symptoms; a scanty evacuation by urine or stool; disappearance of the natural bloom of ordinary health without any known cause; sudden changes in the accustomed tint of the complexion; a stumbling gait without the usual firmness and power of equilibrium; indifference for things for

which the patient had previously shown great fondness and preference; peevishness; intolerance of light; dislike of noise; a natural pulse, with only now and then a few pulsations stronger or omitted; fits of absence and musings, with deep sighs; a dry skin; a general loss of strength; a marked change of the ordinary appearance of the patient.

From the presence of the greater number or all of the above symptoms of acute hydrocephalus, with a careful consideration of its causes predisponent and occasional, together with the age and constitution of the patient, the physician may decide with a considerable amount of certainty on the presence of the formative stage or that of turgescence of the disease under consideration.

#### PATHOGNOMIC SYMPTOMS OF THE SECOND STAGE OR THAT OF INFLAMMATION.

In the stage of inflammation, the remarkable symptoms are the great sense of pressure on the eyes, pretty constant and continuing during sleep; these pains frequently alternating with painful affections of the stomach and bowels, without at first being accompanied by any considerable accession of febrile disturbance. In a small proportion of cases we occasionally encoun-

ter violent attacks of fever, with or without convulsions; preceded for a brief period by symptoms of turgescence, as well as also by symptoms of intense anxiety and restlessness; retreating of the eye backwards into its socket, with much morbid sensibility of that organ: in sleep it is only half covered, its pupil being in the meantime contracted. Add to the foregoing symptoms an increased heat of the head; an altered countenance with great paleness of the complexion; dryness of the nostrils with indurated and fissured lips; entire absence of appetite both for food and drink; repeated vomitings, always increased by movements of the body; a peculiarly sour smell of things ejected from the stomach; an entire suppression, or great diminution of the power of digestion; a remarkable and characteristic foetor of the breath; a constant dull pain in the regions of the stomach and liver; a great subsidence of the abdomen, although it might immediately before the accession of the disease have been full and prominent; general and rapid emaciation; obstinate constipation; urine scanty and turbid from being charged with a white heavy sediment; acute hearing; sleep disturbed, accompanied by much grinding of the

teeth, but not often interrupted at this stage of the malady by frightful dreams ; the heat of the head and stomach compared with that of the rest of the body greatly increased ; the general debility very considerable, and more or less rapidly advancing ; the pulse slow and irregular, with some intervals of intermission between the strokes of the artery : the skin more and more flaccid.

About this period the shrunk and trembling hand is carried involuntarily towards the head, and this happens concurrently for the most part with an entire change of countenance, a reduced capacity for speech and conversation, with an obvious collapse of all the powers of life.

#### OF THE PATHOGNOMONIC SYMPTOMS OF THE THIRD STAGE.

Those, on the other hand, which mark the period of effusion and palsy are principally the following. A sudden transition from the highest state of sensibility to that of extreme dulness of all the senses ; inability to sit up in bed without help ; an oblique position in bed ; a frequent involuntary movement of the hand towards the head ; a similar action of one or both feet against

the bed-clothes, one lower extremity being kept upright, and rested against the heel, so as to be instantly ready to be rocked from side to side, or to be stretched out at full length in correspondence to the harassing restlessness of the patient; frequent application of the fingers to the ears, mouth, and nostrils, accompanied by much uncertainty of the movements of the hand to the head; a rapidly increasing dulness of the senses, with an occasional exception, however, of the sense of hearing, which may be tormentingly sharp and quick even to a late period of the malady; a downward look of one or both eyes; deceptiveness of the sight, with double vision, and a convulsive opening and shutting of the eyes for some seconds.

Then follow sudden, but uncertain flushings of the countenance, with sometimes a gloomy earnestness and a threatening mien, during a convulsive play of the eyes; emaciation in the highest degree; a clear gold yellow scanty urine, with the characteristic deposit, and passed unconsciously; obstinate constipation; a weak, soft pulse, but as irregular as in the former stage, if not more so; a respiration intermitted by frequent

sighs, the breath becoming increasingly offensive; constant and audible groaning ; sudden and loud screamings ; grinding of the teeth; a state of the greatest weakness. After the lapse of from four to seven days of these symptoms variously combined, there returns, in some patients, a short recovery of mind : for a brief period they recover their ability to speak, to long for and to take food, to wish for their playthings, to recognise their favourites and playfellows, and even to call them by their names, and to be entertained by their conversation. Their parents, and even occasionally their less experienced medical attendants, are thus exposed to be deluded, but only for a very short time ; for the little patient soon again relapses into his former state, and sinks still lower into the complication of pitiable symptoms usually attendant on the dying state. These are convulsions, with terrible spasmodic contractions of the spinal muscles ; palsy of one side of the body ; vehement fever, although in the midst of great prostration of strength, accompanied by the colliquative perspirations of the moribund state.

Hectic redness of the cheeks, in fatal contrast with the utter loss of vision ; palsy of the iris, or

spasmodic contractions of the pupil with a blood-shot albuginea; complete deafness; difficult deglutition; a trembling movement of the unpalsied hand; diminished warmth of the unpalsied side; and an approach to suffocation from efforts to vomit without effect, are, in the greater number of cases, the more prominent parts of a picture, the most melancholy that can be well conceived, that of a protracted and cruel disease yielding up its victim to the last fatal sufferings.

Such is a compressed account of the principal diagnostic symptoms of hydrocephalus, including its three several stages; such being in point of fact the greater part of the proper symptoms of the malady as they constitute essentially the pathognomonic phenomena of the disease.

The above accurate and carefully drawn picture, a tablet having little more upon it than what essentially belongs to the pathology of hydrocephalus, becomes, by comparison of its several sections, a minute description of the symptoms belonging to each section, and a document which may be relied upon for the accuracy of the facts described, and easily put in juxta-position with the symptoms of other febrile diseases, presumed

to present certain resemblances to the disease called water on the brain ; a picture, therefore, which will furnish a sufficient and satisfactory means of coming to a diagnosis of the malady under our more immediate consideration.

#### OF SPECIALLY PREDISPOSING CAUSES TO ACUTE HYDROCEPHALUS.

After the above general view of the several symptoms of hydrocephalus, it may possibly be useful to determine the attention of the reader to certain special causes of the disease operative in most countries, especially during the irritation of the first dentition. The formative stage of hydrocephalus is ordinarily a period of general indisposition ; and it may be frequently known or suspected to be the effect of an occasional cause of sufficient power to have produced the symptoms complained of ; and the phenomena of dentition are indeed frequently recognized, and are much more frequently ascertainable, as the occasional cause of an overfullness of the vascular tissues of the head than any other *single* cause whatever. It is a fact of daily experience, that at

the commencement of the stage of turgescence from this cause, the little subjects of the overfullness supposed become drowsy and almost unrousably sleepy as soon as the said plethoric fulness of the vessels of the head can be supposed to take place.

This result is accompanied, or speedily followed, by a perceptible increment of heat in the head, and by pain of some particular region of it : the locality of the former will enable us to discover the seat of congestion, and therefore, also, the locality of the latter. The headache here spoken of naturally introduces a state of peevishness, a suspension of all cheerfulness, and incapacity for the ordinary vivaciousness and activity of early childhood. The little subject becomes silent and irritable : it ceases to be easily amused, dislikes light, and the officious attentions which are kindly intended to entertain and to soothe it. The lively colour of its countenance begins to fade, its eye grows dull, it also loses its appetite for spoon food, and takes the natural food, the mother's milk, with diminished relish. The remaining symptoms of the first stage supervene in due course. If the medical attendant should, at this time, care-

fully examine the state of the gums, he would in most cases find it easy to refer the symptoms just enumerated to irritation from dentition, and would come to the conclusion, that they could be no other than the result of that painful process : the proper treatment in that event would naturally suggest itself to a sagacious and well-informed practitioner. We must refer, however, the practice to be adopted in such a case to another opportunity. It may suffice for the present to state, that if applied with vigour, and sufficiently early as to time, it will have the effect of breaking the neck of a disease only as yet about to form. It may be here advantageously intimated to the reader, that the irritation from teething is, in nine out of ten cases, the occasional cause of acute hydrocephalus during the three first years of life.

The predisposing cause to hydrocephalus next in frequency to the irritation from teething is the very defective system too frequently resorted to in this country, and perhaps in most countries, to supply the infant with artificial food on the failure of the natural food originally provided for it by the mother. On the threshold

of this inquiry, I might be expected to enter at once upon the controversial and very comprehensive subject of weaning. But although tempted by many very important considerations to make some practical reflections on the shameful manner in which many ladies in easy, and even in wealthy circumstances, are induced to neglect the first and most important of their duties to their infant offspring, I feel myself at present compelled not to undertake the task. It is my present object therefore to pass on, briefly to notice the usual irregular and defective method of supplying growing infants with food competent to furnish them with a sufficient quantity of bland and salubrious blood. It is a fact much to be regretted that the milk of the cow, which is most accessible to all classes of families, is not easily digested on a very young infant's stomach ; and thus motives have been furnished for druggists and other traders in matters of this kind to recommend for the purpose in question several varieties of vegetable foods easily made into agreeable mucilages ; such as the mucilage of arrow root, starch made from the potatoe, or from wheat, flour, tapioca, and other articles

of the same description, which are ordinarily made so palateable that children will not only take them without objection, but often with great relish and avidity. Thus are mothers too often enticed to put their young offspring on what is called spoon diet prematurely, and perhaps to prolong its use too exclusively, until a foundation shall have been laid for an incurable delicacy of constitution, of which this system of management is abundantly productive. It is surprising how an injurious practice, or a partiality for worse than useless objects of use or purchase becomes universal in England, by dint of the trickeries of public advertisements. This has especially been the case with the flour of arrow-root, which has for many years found its way into every house in the kingdom where there are young children. The mucilage of arrow-root, either with or without milk, makes, it must be admitted, a nice variety of food, as an *auxiliary* to the natural nutrient from the mother; provided it be used simply as an auxiliary to the mother's milk, and only for a few of the first weeks or months of the infant's life. Its nutritious qualities are insufficient

for the entire feeding of a child of more than four months old : and yet how many are there, even of our better educated ladies, who think that the flour of arrow-root furnishes the best food for infants that has ever been known, even without exception in favour of any other food whatever, whether natural or artificial. The consequence of this unfounded, but almost universal, prepossession, is, that a large proportion of our younger children are attempted to be fed on arrow-root at a period of their growth when they stand in need of a great abundance of good blood to sustain them during the first crisis of their constitution ; namely, that of their first dentition : under the pressure of which many of them are known to succumb. While supplied exclusively or principally with this weak and sloppy food, all children, without exception, as far as I have been able to observe, gradually lose their flesh, and very soon after, their colour and spirits. With these changes they become less torrose and vigorous as to the form and firmness of their limbs ; but more delicate as to their appetite, and more fastidious in their choice of food. With the re-

duced vigour of their corporeal frame, their minds, usually about the same time, sink into fretfulness and want of spirits.

The smiling gaiety of the two or three first months is suddenly, or at all events speedily, exchanged for a spiritless immobility that seeks no change, and a gravity naturally unknown to early infancy. In this way the constitutional powers of the infant become eventually so much depressed as at length to prove incompetent to carry on the business of life without great danger of interruption. In the languid progress of the feeble life here supposed, the spoon-fed infant becomes more and more attenuated, its flesh becomes more flabby, the cellular membrane less charged with wholesome fat, and its blood-vessels less distended with wholesome blood : the child's countenance becomes pale, perhaps squallid, or else bloated with an unhealthly fulness ; when the eyes, brilliant enough, perhaps, in many cases to express much morbid acuteness and sensibility, sink deeply under the shelter of a rapidly projecting forehead, which an imperfect action of the digestive functions is already preparing for one of its striking peculiarities. In

the mean time its abdomen is gradually enlarging to what is usually called pot-bellied ; distended, first, by obstructions from sub-inflammatory enlargements of the mesenteric glands, and then by more intense inflammations of their tissues ; and eventually by extensive suppurations, attended, of course, by sundry disqualifications for their proper functions in the living body.

In this state of things, the circulations of some, or all, of the abdominal viscera become liable to be impeded ; and thus to become in their turn causes of other impediments in different and distant parts of the body : such, for instance, as swellings and inflammations of the joints, pneumonia and pleurisy of the organs of respiration, and perhaps, more frequently than any other, an increased determination of blood to the vascular tissues of the head, accompanied by that sort of inflammatory diathesis of the same tissues, which usually terminates in effusion of fluid into the ventricles of the brain. In this way, I think we may very sufficiently account for the fact of the frequent occurrence of hydrocephalus from defective and ill adapted food. This is not properly the place to introduce the subject of correctives

of this bad system of dieting young infants. I may, however, be permitted to make a very few remarks upon this part of my subject, without incurring the charge of wandering to any great distance from the proper matter of our present inquiry.

I would first then observe that the best food for a human infant is that which the mother herself provides for its use. This food is obviously of animal origin, by having been secreted by the lactiferous apparatus of a human female. By means of the salivary and gastric juices of the infant, some further changes must be made, and are made upon it, during its digestion in the child's stomach. In this way the food which nature herself provides for the nutrition of early infancy is easily converted into chyle by the solvent and other functional powers of the chylopoietic organs. But is a similar result to be expected if we take the liberty of alienating this natural and excellent food of infancy for other purposes ; or otherwise neglect for any objects of pleasure or interest, to make it available for its proper use ? Is it likely that we should be able to discover in any remote kingdom of nature, and as a special example in any produce of the vegetable

world, an alimentary substance of equal value and aptitude for its purpose with the excellent food which all-provident nature has so kindly supplied?

The question is pretty obviously provided with an answer, in the remarkable difficulty which art has hitherto encountered in its attempts to discover any safe substitute for this natural food of early infancy. To improve on the operations and provisions of nature is often an unprofitable undertaking. The conception of such an idea would seem *à priori* somewhat absurd and impertinent; whilst, as in the present case, its results, in the long run, are often exceedingly untoward and unsuccessful.

Hence the fact that artificial food, of whatever materials, and however well prepared, is to be estimated as one of the principal causes, and when operating concurrently with dentition, *the most frequent cause*, directly or indirectly, of hydrocephalic congestion.

It is not to be denied, that young and healthy infants are ordinarily endowed with a strong appetency for food. With a few exceptions, the proper mother's milk is usually preferred by such infants. Such exceptions, when occurring,

are for the most part the results of certain peculiarities of imperfection, either as to quality or quantity, in the supply of that excellent food.

The infant sometimes shows a dislike for its mother's milk, when it cannot be satisfactorily proved to have any faults of quality or flavour by the ordinary tests. Such dislikes, however, when very strongly expressed, usually get the better of all the perseverance and pains-taking which are usually resorted to by mothers and ladies' nurses on such occasions, to induce the child to take the breast.

The best remedy, where it can be afforded, is to procure the services of a good wet nurse. This measure is advised, not because the child would often refuse artificial foods, made of arrow-root or of biscuit powder, etc., for it would generally take foods of this kind with great appetite and relish ; and for a time such artificial foods might promise to do very well for the cases in question. The evil arises afterwards, in the course of a week or two, or perhaps it may be a month or two ; for sooner or later it will almost certainly happen that the artificial food will eventually disagree with the infant's stomach. An estimate

of the value of such food is not to be made by the ability of the child for a time to tolerate, or even to digest it. In a limited sense of the term digestion, it may prove itself competent to perform that process upon it. In this sense of the word, digestion might amount to little more than an easy solution of food in the stomach, with its subsequent transfer to the smaller intestines, to be there dealt with by powers and processes peculiar to those organs.

In the wider sense of the term digestion, the final result of a series of processes is generally understood by it ; including the solution of food in the stomach, its chylification, or its conversion into a bland absorbable fluid ; its combination for that purpose with certain specific fluids, which it meets on its passage through the superior or small intestines ; its absorption, without impediment or difficulty, by the lacteal absorbents, which are vessels specially employed to convey our aliment from the intestines to the mass of circulating blood ; and, finally, its proper assimilation with that blood itself. The infantile stomach is in many cases so incompetent to perform the whole of these multifarious processes, that it occasionally fails to

execute the very first in the series, that of effecting the primary solution of food in the stomach.

It is in the larger sense of the term digestion that I wish to be considered as speaking of the power in question as a general competency of the infantile stomach to convert human milk or other sundry artificial foods into nutritious and wholesome aliment, consentaneous with the constitution and attributes, already just alluded to, of a young infant subject. In my experience of the qualifications of hired nurses, I have often known that the milk of the same woman has agreed exceedingly well with the child of one family, while immediately after, under very similar circumstances, it has entirely failed to furnish wholesome nutriment to a healthy child of another family. The apparently best human milk sometimes disagrees, and occasionally so decidedly as to require a change of the wet nurse as a measure of instant necessity, in order to rescue the disordered infant from the effects of a diarrhoea of great obstinacy and virulence, superinduced by the milk of the nurse now about to be exchanged. I mention these circumstances chiefly with a view of pressing

upon the consideration of my readers the apparent occasional capriciousness of an infant's stomach, and its non-aptitude for digesting certain varieties of milk or other aliment, which, under ordinary circumstances, it might be expected to digest most readily and advantageously to the interests of the little subject.

I have resided a good many years both in London and in the country, and therefore I think myself competent to say that children brought up in the country are, on the whole, more easily supplied with sufficient and suitable food than young natives or residents of London.

It seldom happens that a young mother living in the country has good reason to complain of want of milk for the supply of her infant offspring. I must confess that it sometimes so occurs; but I am quite sure that this evil is not complained of nearly so frequently as in London. This result must, I presume, be attributed to the robust constitutions, simplicity of manners, better living, and freedom from notorious immoralities of women living in the country, in comparison with persons of the same classes of female residents amidst the luxuries and miseries of Lon-

don. Add to this, that a child brought up in the country is competent, by reason of the greater purity and salubriousness of the atmosphere in which it is constantly immersed, to put up with coarser food and to look well and thrive under circumstances of neglect, mismanagement, or even of occasional destitution, which could scarcely fail to prove fatal to children living in the insalubrious atmosphere of large towns. If a child survive the ordinary age of the first dentition, it will frequently arrive at a period of developement of its powers which will greatly confirm its purchase of its natural privileges of health and strength; but the fact is that many infants do not arrive at that age in full possession of the attributes in question.

I now, therefore, proceed to show how, subsequently to the concurrent periods of weaning and dentition, imperfections and irregularities of the digestive functions may continue to keep up a predisponency to acute hydrocephalus.

When it is considered that organic diseases of no little importance are frequent effects of disorders of the functions in question, it will be

easily understood how such effects may continue for years to entail upon their subjects all the liabilities to which they had at first exposed them. Persons of ordinary information can scarcely be made to conceive to what amount of constitutional injury, even for life, a vigorous infant is exposed by a premature abstraction of it from its mother's milk; and to what extent even its life is exposed to danger, in consequence of the failures of sundry contrivances and experiments which must be then resorted to, to bring it up upon spoon food. If it should escape with its life, which it frequently fails to do, it scarcely ever afterwards, in the greater number of cases, recovers its previous fulness and firmness of flesh. The imprint of its artificial delicacy, inflicted upon it by the ignorant management of its parents, during the two or three first years of its existence, remains indelibly stamped upon its feeble and lymphatic system during the entire currency of its subsequent infancy and childhood. Hence the general sickliness of its complexion, the softness of its limbs, the morbid protuberance of its forehead, and the almost equal tendency to hydro-

cephalus, and to the rickets, of that period ; and hence also the contractedness and flatness of the chest ; the compressed packing of the organs which it is destined to contain, and hence the frequent want of symmetry and perfection of muscular power which attend on the years of advancing childhood, and which are apt to accompany it, amidst many other serious drawbacks upon the perfection of good health, to the ages respectively of adolescence and youth.

Among the most frequent predisponent causes to acute hydrocephalus, are the ages of infancy and early childhood ; the foregoing explanation enters at some length into the facts, on which the opinions of the profession upon the subjects in question are founded. Having thus, therefore, generally indicated the great parent cause of the predisposition alluded to, I may be expected to notice more pointedly the subdivisions of such causes, as we meet with them in society.

Under such subdivisions, we cannot omit to notice various peculiar characters of mind and temperament for vivacity, intelligence, and irritability ; certain corporeal forms and conformations, such as weight of brain, disproportionate to that

of the rest of the body, the asserted softness and succulence of sundry parts of that great organ and its appended tissues ; repeated congestions of the vascular tissues of the brain, the consequence of morbidly repeated determinations to the encephalon ; peculiar developement of the latter ; repeated irritations from the difficulties of teething ; and, according to the opinion of authors, from the presence of worms in the intestines. Under this head of the subject must be placed, in further compliance with the opinions of certain writers, injuries of the head during parturition, to which we might add tight swaddlings, as used in some countries for weeks or months after the birth. Constitutional difficulties in respiration in very young subjects producing the symptom now pretty generally known by the name of laryngismus stridulus.\* Many of the febrile diseases of young

\* For a long time I entertained the opinion that laryngismus stridulus was an effect of the irritation of dentition : but of late years I have doubted the correctness of that opinion, in consequence of having met in practice a number of examples of the diseased affection in the absence of dentition, or at least for many months anteriorly to the probable protrusion of any teeth through the gums.

subjects, such as the infectious exanthemata, small-pox, measles, scarlet fever, and of course all the gastric fevers of infancy, may be enumerated as fruitful sources of predispositions to acute hydrocephalus. To these may be added the influence of all the continued diseases of the abdomen, producing inflammations and obstructions of the liver, the spleen, and other abdominal viscera, and also of the lungs and other organs within the chest.

All such influences must be placed in the same category of an unquestionable tendency to become sources of predispositions to head affections; first, by producing and sustaining an excess of vascular determination to the brain; secondly, by exciting sympathetically a morbid action in the vascular tissues of the brain; and thirdly, by what I may be permitted to call a critical metastasis of the diseased actions of organs within the chest and abdomen to the vascular tissues of the encephalon.

Permanent vigilance of very young subjects, or long continued sleeplessness for many hours, without any discoverable disease or pain; irregularities of the bowels for a long period, with im-

proper colour of the alvine secretions; the abuse of opiates with other compositions, called by nurses and weak mothers soothing medicines, are doubly productive of the evil influence now under consideration on the important tissues of the sensorium.

Early and frequent use of stimulating and fermented liquors, together with highly condimented and rich foods, by which the circulation of the blood is quickened in the viscera of the abdomen, are, for a similar reason, entitled to be placed in the list of causes productive of an increased determination of blood to the head. Here must also be found a place for certain injurious influences, too frequently chargeable on the over anxiety of parents to engage their children at too early an age in excessive occupations of their minds. School exercises are sometimes performed under circumstances of too much harshness of discipline, productive of strong emotions, and even of agitations of mind, not perhaps without a succession of personal panics and terror, likely enough to be followed by profound anxieties and mortifications.

These are direct influences too obviously calculated to produce injurious results; in the first instance, on the healthy actions of the sensorium

itself; as well as, secondarily, upon those of the chylopoietic organs, to be either doubted or disputed.

It has been observed by Dr. Cheyne, that diseases imperfectly cured have a tendency to undermine the general health, and as such should have a place in the list of predispositions to acute hydrocephalus. Several eruptive diseases, which are perhaps most remarkable for their frequency of influence as occasional causes of the most rapidly fatal forms of hydrocephalus, usually arising from direct mis-management of the original disease, are also known, although perhaps of less frequent occurrence, to operate remotely as predisponent causes of the same malady. It is an extraordinary statement of Dr. Gölis, of Vienna, that strong emotions of the mother during the last months of pregnancy greatly predispose the children of such pregnancies to become the subjects of hydrocephalus.

“A more multiplied experience of this cause,” observes that eminent physician, “than before, was afforded to me as well as to other physicians of Vienna, in the year 1809, when our imperial city was bombarded. Most of the children who were born after this frightful catastrophe, at about ten,

twenty, and thirty days subsequently to their birth, were seized with convulsions and died. Within the cranium were found traces of inflammation, and in the ventricles effusions of lymph and of serum."

Chronic diseases of all kinds, as well as cachetic results of all slow inflammatory affections, such as anasarcaous enlargements, ascites, and effusions into cavities of all descriptions, must be added to the already very long list of circumstances productive of predispositions to hydrocephalus ; and to that list must be added still one more item, namely, hereditary predisposition.

Girtanner doubted, indeed, the pretension of this last circumstance to be considered a predisponent cause of hydrocephalus, and he was a physician of high character and great experience ; but we must not forget that the profession generally, and physicians of the greatest experience, have almost unanimously asserted it. Do we not every day meet with examples of many members of the same family becoming the subjects, one after the other, of acute hydrocephalus ; and I must confess, that I am myself strongly inclined to adopt the general opinion.

OF THE EXCITING CAUSES OF ACUTE  
HYDROCEPHALUS.

Under this head I am not sure that there might not be enumerated many of the items which I have already assumed under the general circumstances connected with diseased actions, as to many predisponent causes ; but at all events, I have now to add all sudden and violent movements of the body, calculated especially to increase determinations to, and to act unfavourably upon, the vascular tissues of the brain ; such as all violent agitations of the brain from blows, falls, jolts of cradles, or carriages of any description ; rough and indiscreet games having the effect of placing the head during strong exertions in positions below the level of the body. A case in illustration of this point is given very apositely by Dr. Gölis. "Master R., four years old, after a severe illness and inflammation of the lungs, from which however he had well recovered, fell out of a cot with his head foremost upon a stone pavement. Cold vinegar and water was applied to the bruised surface, and, fearless of any worse consequences, neither physician nor surgeon was consulted. About five weeks after this fall he

began to complain of many symptoms of turgescence of the head, which were attributed by the mother to the influence of dentition. It was not until violent headaches, vomiting, and other severe symptoms indicative of a morbid determination to the head, that any medical assistance was sent for. It was then unfortunately too late." Dr. Gölis alludes to another case illustrative of the same doctrine. "Miss P., a young lady of eight years of age, fell from a height of three feet with the head foremost. To avoid a scolding for her carelessness, she kept this accident a secret from her parents. Six weeks afterwards there arose the symptoms of cephalic turgescence, which was soon followed by nausea, coated tongue, and vomiting; a hot forehead, severe pains in the head and nape of the neck, alternating with pain in the stomach and great intolerance of light; and in short all the pathognomic indications of hydrocephalus supervened in rapid succession, and thus a fatal disease was speedily established."\*

\* The description of the two cases just transcribed reminds me of a case, different as to its results, which occurred about ten days ago in my own practice. It was that of Master Alfred Will-

Amongst the occasional causes of acute hydrocephalus are suddenly suppressed discharges

son, three years old, son of Mr. Willson, a wholesale tradesman, residing at No. 14, King Street, Long Acre. Two days previously to my first visit he sustained a concussion of the brain in consequence of a fall, with his head foremost, on the flags of the street, not far from his father's house. He had, as in one of the cases related by Dr. Gölis, cold vinegar and water applied to his head, soon after the accident. At two o'clock on the following day he became the subject of complete stupor ; and about nine o'clock in the evening of the same day, I was requested to see him in consultation with Mr. Johnson, of North Place, Gray's Inn Lane. At this time nothing had been done in the way of treatment. I requested that the copper usually employed by Mr. Willson might be forthwith sent for ; and he was cupped without loss of time to the amount of between ten and eleven ounces of blood, which produced a state of complete fainting. This bleeding had the effect of considerably diminishing the stupor, but not of entirely removing it. A cushion containing iced water was therefore placed under his head, and evaporating lotions were applied to the exposed part of the sinciput ; the whole of the head having been previously shaved. These applications were continued without intermission ; excepting when it became necessary to change the contents of the cushion for a supply of a colder substitute. This was continued during the whole of the night. On the following morning the stupor had been in a great measure subdued, so that the patient could be made distinctly to answer my questions and to give an account of

from eruptive diseases of the head and face, and from angry and extensive ulcerations behind and in the neighbourhood of the ears ; the retrocession of exanthematous, and other febrile eruptions, such as measles, small-pox, scarlet fever, erysypalus, and from bastard inflammations consequent upon the application of imperfect or depraved virus of cow-pock.

In the same list should be placed suppressed discharges from fistulous openings ; inflammations of the head, face, eyes, ears, mouth, lungs, and peritoneum ; inflammations of the abdominal viscera, particularly of the liver and stomach ; all kinds of quinseys ; aphæ, particularly the infectious form of it in new born children in hospitals and foundling houses, by which great numbers of children are destroyed ; the use of high seasoned foods ; the sudden removal of the hair by his sensations. He complained, however, of intense pain of his head, and soon relapsed into his previous somnolency : by means of an emetic to expel the contents of the stomach, and purgatives, consisting of calomel and croton oil, continuing the use of the cold cushion and evaporating lotions, I found on the subsequent day that he was convalescing so rapidly as to make me entertain much less anxiety as to the eventual result. From that period he recovered rapidly, and is now in perfect health.

shaving, and a subsequent exposure of the head to the action of an intensely cold atmosphere; a filthy condition of the scalp through want of cleanliness;\* and finally metastasis of morbid fluids, by reason of imperfect or false crises of acute and eruptive fevers, added to many other similar influences which must be placed within the comprehensive cycle of exciting causes of acute hydrocephalus. Some continental writers of great reputation have ascribed a large proportion of cases of hydrocephalus to colds caught during the first days after birth. Such in fact are often causes of inflammation, and subsequently of the convulsions which in consequence occur at that early period of life; and which therefore will have their natural and proper tendency to produce that action of the vascular tissues of the encephalon which are known to terminate in effusion of lymph and serum into the ventricles of the brain.

It is indeed a curious fact that we are rarely

\* Among the children who are brought to University College Hospital for treatment on account of incipient symptoms of acute hydrocephalus, a very considerable proportion of them are the subjects of this state of uncleanliness of the integuments of the scalp.

called to perform post mortem inspections of heads in consequence of deaths from convulsion in which we do not find quantities of various amount of fluid effused into the ventricles of the brain. Many of the deaths thus produced are the results of acute hydrocephalus, in consequence of colds caught some days after birth, as Dr. Gölis confidently asserts in the following passage: "The frequent examinations of infants who have died of such convulsions have taught me that this disease has been the water stroke, or the acute hydrocephalus. In children of a more advanced age, the cooling of the head suddenly has sometimes produced that fearful disease, as is abundantly proved by the following case. Henry A., four years old, vaccinated, strong, lively and well nourished, heated himself by violent running in a spacious garden, having profusely perspired with bare head and breast, and having the back only covered with his shirt, was exposed to a pouring rain until he was wet through. Next morning he complained of weight in his head, sense of tension in the nape of his neck, transient lancinating pains in the forehead, feebleness, absence of

thirst and appetite, with slight fever, in which, however, the pulse was of the natural frequency and fulness. I already, however, remarked an irregularity in the beats of the artery; as some were hardly to be felt, and others were omitted. He was constipated, and had scanty though natural urine. The skin was dry to the feel. My first care was to restore the transpiration of the skin, from which I expected much good. On the second night after the exposure of cold, the fever became more fully formed, and at the same time the above-mentioned symptoms more violent. A remarkable remission of the fever followed towards noon of the third day. Emollients, with the root of elder and acetate of ammonia, were the medicines which were prescribed; and cataplasms to the feet and a glyster, which operated well, were the external remedies which I employed. I expressed to the parents of the child my fear of acute hydrocephalus, and proposed blood-letting, at which they were more terrified than at the danger to which their child was exposed; because a surgeon, a stiff Brunonian without principles, had related to them some horrible stories about blood-letting, and

prophesied the worst consequences. In a consultation with a learned physician and this surgeon the disease was stated to be an intermittent fever, because at this time intermittents reigned epidemically in and about Vienna ; and in spite of my remonstrances, Peruvian bark was ordered, which the parents with great readiness administered to their child ; but the results verified my diagnosis ; for the inflammatory tension, with severe pains of the head, and all the symptoms which accompany this stage of acute hydrocephalus, showed themselves. A second consultation, with a really practical physician attached to no system, and intimately acquainted with this form of the disease, was now called : but it was too late. All the means employed, which at an earlier period would certainly have prevented effusion into the ventricles, were no longer capable of arresting the progress of the disease. Insensibility came on, followed, after the lapse of six days, by palsy, accompanied by the usual most violent symptoms of the disease ; and at the end of eight and forty days from that time, the little patient's sufferings ended. Dissection :—this was attended by the physician who in the first consultation proposed

the bark, and was performed by the surgeon. The blood vessels of the pericranium were tinged ; the bones of the pericranium were blue; the sutures were separated from one another by a line, and the interval was filled by a bloody extravasation. The blood vessels of the membranes of the brain were uncommonly large and turgid with blood, as were also the sinuses, in which crux and much lymph floated in the serum. Between the pia mater and the brain, which was firm and elastic, I met with much coagulable lymph. On the corpus callosum lay a covering of the same, about as thick as the back of a knife ; and it was equally thick at the basis of the cranium, where it gave an envelope to the blood vessels and nerves. The ventricles, in which more than six ounces of water were contained, were lined by coagulable lymph throughout all their length and incurvations. The plexus choroïdes was very pale, and wholly covered with lymph. The pituitary gland was in its natural state, with the exception that it was covered with lymph ; the septum of the ventricles was broken through ; the white substance of the

brain was of a reddish colour ; the viscera of the thorax and abdomen were perfectly healthy.

“The incredulous physician began after this to believe in the acute hydrocephalus ; whether the surgeon, who some time afterwards went to Russia, was converted, I know not.”

The above case is full of interest and instruction ; I shall probably have occasion to allude to it again in the sequel of this little volume.

It is the opinion of Dr. Gölis, and some other writers, that violent agitations of the brain should be placed among the most frequent occasional causes of hydrocephalus when it takes place in well-grown children, perfectly healthy and lively, after they have begun to run, clamber, and jump about, and who consequently have often to encounter falls and tumbles of serious moment. “I am not sure,” observes this admirable reporter on this subject, “that the greater part of the sufferers whom I have had to treat for this disease, did not come by it in this way.”

Another exciting cause of acute hydrocephalus, which after the foregoing may be looked upon as the most important, is the sudden drying up of

discharges from large ulcers, and hot and moist eruptions on various parts of the body. The young practitioner may here be informed, that although the occasional cause in question is of equal importance, if not of quite equal frequency of occurrence, with the exciting causes of hydrocephalus in some other cases, the mischief likely to arise from it may nevertheless be anticipated, and rendered comparatively impotent in a great proportion of cases by means of free and ample bleeding, and by the vigorous employment of other evacuating medicines. The rule for the first bleeding should be that of its being carried to full deliquium.

It is worthy of remark, and from analogy a matter of inference, that repulsion of the morbid secretions incident to the most active febrile exanthemata, especially the worst varieties of such fevers, in common with the worst forms of inflammatory cutaneous affections, should on no account be excluded from the list of occasional causes of acute hydrocephalus; for it really is one of very considerable frequency.

It has been confidently asserted by Gölis, for whose opinion I entertain a high regard, that

in some cases of chronic hydrocephalus, the fluid contained in the ventricles of the brain, either from fermentation or in consequence of some action of a specific nature which we do not perhaps very distinctly understand, becomes an exciting cause of the acute form of the disease. The same gentleman, moreover, informs us that he considers that the reverse of this result has sometimes taken place, and that the acute hydrocephalus, in consequence of being checked by the treatment resorted to, but not absolutely cured by the remedies employed, terminated neither in recovery nor in death ; but degenerated into the chronic form of the disease. He illustrates his statement by the following example : " Matt. Sch——r," three years and a half old, healthy, and well nourished, strong, after having passed through the measles and small-pox, sustained the accident of falling over a table, which produced a violent concussion of the brain. Immediately the mother of this child requested the advice of the late Dr. Treber. The proper remedies for the stages of turgescence and commencing local inflammation were employed ;\* but not with the

\* It is a pity that Dr. Gölis has not here favoured his readers

best effect : for although the acute symptoms of inflammation were removed, the little patient's former activity and vivacity did not return, giddiness, dim sight, disposition to anger, difficulty in walking, and hanging down of the head, remained; imbecility of mind, and palsy of the lower limbs followed, and even the sutures of the once firmly closed bones of the cranium yielded. In proportion to the diminution of his powers of mind, there was an increase in the circumference of his body : and he devoured three or four times the proper quantity of the most indigestible food. In this state of mere vegetation, he was attacked with scarlet fever, on which supervened acute anasarca and hydrothorax, from which he was as happily saved as from the fever. With the development of chronic hydrocephalus the size of his body advanced more rapidly than before the accession of the two above-mentioned diseases. He moved with difficulty, and became daily larger. Blindness and palsy of the hands followed ; and stools and urine passed unconsci-

with any information as to what he considered "the proper remedies," and what might have been the amount of blood taken, if such a measure was resorted to.

ously ; and in the eleventh year of his miserable life he was removed by death.

Examination of the body after death :—“All the sutures of the cranium were excessively thin, and were separated. After removing the vault of the cranium, the brain fluctuated under the dura mater like the abdomen in ascites ; and excepting the dura mater no trace was found of its membranes. The cineritious substance, in which nothing organic was observed, lay on the medullary like a thin inseparable layer. Both substances represented a foot-ball filled with fluid ; and floating in the centre of it was found a membranous sac consisting of a preternatural membranous tissue, in which more than three pounds of pure clear water were contained. This sac was prolonged through all the vertebræ down to the sacrum, and round the outer surface of this membranous canal there was remarked a thin layer of spinal marrow adhering to it. The cavity of the spinal marrow was so dilated that a man’s thumb entered it with difficulty. The water sac, formed of preternatural membrane, easily separated from the medullary layer of the brain, the outer surface of the sac was as smooth

as the surface of the medullary substance to which it was annexed. This surface was soft and white. In the neighbourhood of the medulla oblongata was remarked a cineritious bundle of infinitely fine threads, which, in prolongation from their origin, were distributed and lost on the vault of the ball. Of the choröid plexus, of the pituitary gland, or of any other organization of the brain, there was not the least trace to be seen.

External inflammations of the head, neck, and face, and violent inflammations of the eyes in new-born children; inflammations of the ears and nose, and throughout the respiratory passages; all kinds of erysipelas, which may occasion turgescence in the head or propagate inflammation to the membranes of the brain, are capable of producing acute hydrocephalus: sometimes it may prove the hyper-acute form of it, or the apoplexia hydrocephalica of Cullen, or another form of hyper-acute hydrocephalus, which we ordinarily designate simply by the term of convulsions.

Violent inflammations of remote parts or organs, either by impeding the circulation of blood

in the head, by occasioning an increased determination of blood to the head, or by the sympathy which the nerves of remote tissues may have with the brain, may be presumed to produce acute hydrocephalus, but more frequently perhaps to occasion the severer forms of it, the water-stroke of the German writers or the apoplexia hydrocephalica of Cullen.

It has been asserted that violent vomiting, produced either by emetics, or by consent of the stomach with some other suffering organs, have sometimes the effect of producing very active forms of hydrocephalus. Without positively disputing this statement, I have every right to believe that it is in a very great degree exaggerated ; it being a fact that I am in the habit of prescribing emetics in acute diseases as often as most practitioners : but it so happens, that I do not recollect having met with a single case of this description in the whole course of my practice.

It is an opinion, probably much better founded, that suppressed diarrhoeas and dysenteries have a tendency to determine suddenly to the head, and to occasion hydrocephalus in its very severest

forms. We have no very great experience in this country of the results of dysenteries ; but I can speak with more confidence in regard to the effects of suddenly suppressed diarrhoeas ; inasmuch as it is a matter of distinct recollection with me, that in the course of my practice I have met with several cases of hydrocephalus which I felt inclined to refer to the cause in question. I have, however, at different periods of my professional life, and in both public and private practice, encountered several examples of the most tumultuous forms, as so called by Gölis, of acute hydrocephalus cases, which I have ever since imputed to bad management and consequent sudden suppressions or retrocessions of the peccant fluids incident to sundry discharges from large ulcers and extensive skin diseases.

#### OF THE PROXIMATE CAUSE OF ACUTE HYDROCEPHALUS.

Assuming for the moment the fact that the disease now under consideration is an inflammatory affection of the vascular tissues of the brain and its envelopes, terminating in the effusion of a transparent aqueous fluid, accompanied in some cases by an effusion of lymph into the ventricles of

the brain and other chambers of the encephalon, I now proceed to establish these facts by ample references in support of them to competent authorities.

The earlier histories which we find recorded in books having any bearing on the subject under present discussion, were records of what they saw, by persons, in the first place, not anticipating the appearances discovered; and secondly, by persons not sufficiently competent to distinguish accurately between healthy and diseased tissues, and to predicate with truth and confidence how, and to what extent, the appearances discovered were connected in the way of cause and effect with the diseases which had preceded them. Moreover, the malady, which has of late years received the designation of acute hydrocephalus, had not, at the remote period alluded to, been recognised by pathologists as a separate disease. For these and other reasons founded on defective anatomical and pathological knowledge on the part of *post mortem* examiners of our earlier examples of such investigations, failed to furnish all the knowledge of proximate causes of diseases which, under other circumstances, might

be expected to have been afforded by them. We have accordingly to observe, that up to an advanced period of the last century, it had never occurred to any physician or pathologist to consider acute hydrocephalus in any other light than as a simple dropsy, as the effect merely of effusion of an aqueous fluid into the ventricles of the brain, without any reference whatever to the proximate cause of such effusion.

Amongst other writers upon subjects of this nature, we may refer, in illustration of the statement now made to a few dissections of hydrocephalic subjects, which were performed by physicians and anatomists anteriorly to the last century. A dissection of this kind was given so long ago as the year 1676, by Borelli, in his *Histories and Medico Physical Observations*, obs. xxxviii. The case is given as one of a young woman who had been the subject of an intense pain of the head for four months. When Borelli was called to it, he found the patient without fever; but rejecting all manner of nutriment, with the exception alone of water sweetened with sugar, on which she lived many days. She complained of nothing

but of pain of the coronal suture of the head.\* The remedies which Borelli considered most likely to be useful were forthwith applied, and he accordingly ordered bleeding from the arm, together with inunctions and fomentations to the pained parts; but these measures were adopted without affording any relief. At this time there was no swelling nor redness; but our author nevertheless proceeded to the use of what he believed to be effective remedies, and he caused to be applied to the occiput and the surfaces behind the ears a succession of blisters. But even this treatment failed equally of success. At length the same surfaces were cupped and scarified, and were ultimately treated with the potential cautery, but equally unsuccessfully. Our author further intended to make a crucial incision through the

\* It would have been better if our author had referred to circumstances upon which he founded his statement that there was no fever; for it is not to be supposed that the severe symptoms attendant on the progressive development of the whole of the case, could have existed without a considerable change in the character of the pulse, if not in its frequency, certainly in its firmness, quickness, or hardness.

scalp, and to use the trepan ; but death put an end to the patient's miseries before these measures were carried into effect. Having observed some appearance of what he calls purulency of the right eye, Borelli conceived the opinion that upon opening the head he should find an abscess containing pus. In this expectation he directed the especial attention of his pupils to this part of his intended procedure ; but upon making the proper incision into the suspected part, there spirted upwards, to some height, a considerable stream of aqueous fluid, equal in quantity to about two pounds : “ *e quo statim aqua clarissima cum impetu et ad libras duas exivit, quasi e fonte scaturiens, et in altum prosiliens.* ” The history concludes with a statement, that the hydrocephalus was the consequence of a severe cutaneous affection of the head which had been badly treated by repellents. “ *Non parum potuit ad hunc morbum conferre, quod quinque vel sex ante morbum mensibus scabiem capitis passa erat puella nostra, et male a monachis quibusdam curata repellentibus remediis et unguentis frigidis fuerat.* ”

Amongst the causes of the acute and fatal

inflammatory affections which we have now to discuss, we may notice one of a class which we now and then encounter, and which we impute to a translation of a diseased action to the head from a distant part of the body. Cases of hydrocephalus are sometimes examples of the disease from this cause in adolescence and also in adult subjects. A case in illustration of this point may be consulted in Morgagni's very valuable work "*De Causis et Sedibus Morborum, Epist. 1. Art. 2nd.*"

A young gentleman of thirteen years of age, endowed with a fine talent, who had been the subject of inflammation of the left lung since the year before, was seized with pain of the head, especially affecting the region of the forehead, including also the eyes, from which there was a defluxion of a viscid secretion. On the following day he fixed his eyes staringly on his attendants ; he became at the same time the subject of sickness ; and he ejected a viscid matter from his stomach. Soon after, he was taken suddenly with convulsions, during the presence of which he fell into a soporose state, which was frequently complicated by great convulsions. On

opening the head, the dura mater, to the depth of the parietes of the blood-vessels, was found tinted a greyish hue ; and when the dura mater was torn away from the crista galli, there escaped a small quantity of sanious serum from the parts whence the optic nerves had taken their origin. Morgagni, in the sixth, seventh and eighth epistles of his first book, gives several fatal results of effusions of serum and of watery looking fluids into the ventricles of the brain, but without connecting with any of them an inflammatory action of the vascular tissues of the encephalon. The fact, indeed, of such an action of those tissues had not been observed at that period : at all events it had not been applied, as far as I am aware of, to any pathological explanations of the morbid symptoms which had accompanied them, or of the morbid actions of the surfaces or vascular tissues by which they had been secreted.

Hitherto, then, we have no hints given us of the presence of inflammatory action as having been even presumed necessary to the effusion of serum and aqueous fluids into the cavities of the brain, which Morgagni and others had de-

scribed with considerable accuracy. If lymph had ever been effused together with aqueous fluids, we may observe, that up to the period of Morgagni it had not been seen nor described.

I shall next avail myself of the opportunity of republishing an ingeniously drawn up case to which my attention was directed by a reference to it given by Dr. Charles Quin, which very curiously demonstrates the occasional proximity of human attempts to attain their objects, and eventually how compatible such near proximity may prove to the attainment of the fact or good proposed, without finally effecting that object. The case referred to was published by Epiphany Ferdinand, in his work entitled "Medical Histories," published at Venice in 1621. "In the year 1599, in the month of June, a young gentleman in his thirteenth year, being of a hot, but humid temperament, became the subject, in the hottest season of the year, of a most violent pain of his head, especially of his forehead, as well also as the back part of his head. The pain was accompanied by a sensation of deep seated heaviness, *dolor erat gravatus*, and proceeded rather from phlogosis than from true inflammation of the brain and parts subjacent. On the

first day of the disease there was fever which was not acute, but rather sluggish; it was, however, attended with sleepiness; the pulse was not frequent; the urinary secretion was healthy looking and coloured. The countenance was anxious, and the head felt hot upon the hand being applied to it. On the second day, the same assemblage of symptoms presented themselves; and the eyes were painful. On the fourth, fifth, and sixth days, the same symptoms were still complained of. On the seventh day of the disease, the left eye was closed, and the pains of the head were very acute and intense. On the eleventh day, the patient was much worse; and on account of the extreme violence of the pain, he gave himself up to loud exclamations. On the fourteenth day of the disease, he seemed somewhat relieved of his pain, but he did not see perfectly, even with his eyes open; although there was nothing amiss to be seen with them, excepting that the pupil of each eye seemed to be somewhat too much dilated. On the following day the patient complained of no pain.

But the worst of all the symptoms, that of blindness, remained; which could not be made to yield to any medicines whatever.

The symptoms detailed in the above history are unquestionably those of acute hydrocephalus, although the case is given with the heading of one of blindness ; and the method of treatment adopted by Ferdinand, at the remote period of its date, two hundred and forty years ago, is a remarkable example of great comparative excellence. Nevertheless, it proved unsuccessful, for want of sufficient activity in the first instance ; a want, even in our days, which is a frequent cause of failure ; that of vigour in the highest degree at the commencement of the disease. Venesection from the median vein was immediately resorted to, for the median appeared the most prominent. Although Galen has in many places asserted that adolescents should not be made the subjects of phlebotomy until they have attained the fourteenth year of their age ; nevertheless, inasmuch as our youth in this case was well grown for his age, possessed great strength, and was the subject of a sanguineous plethora, he was, on the third day subsequently, bled in the vein of the left arm. The blood was not putrid, but inflammatory, “adustus :” on the fifth day scarifications, with cupping, were applied to the shoulders ; on the

sixth leeches were introduced to the nostrils ; on the eighth, blood was taken by venesection from the forehead ; scarifications, with cupping, were again applied to the shoulders ; and bandages, ligaturæ, were frequently resorted to to take away the pain of the head. But whilst these things were being practised, a new symptom, worse than all that had preceded, began to show itself, namely, blindness, or gutta serena. It manifested itself on the eleventh day. To this symptom we gave our best attention, without a moment's delay ; fearing lest the humour might become fixed, and the disease incurable, which really happened. Immediately therefore on the appearance of this symptom, namely, late on the eleventh day, blood was abstracted from the temples and from the angles of the eyes, scarifications with large cuppings were applied to the back part of the head, together with a cautery to the nape of the neck. I proposed the insertion of a seaton to the neck, but the patient finding himself much exhausted, declined it ; and thus, compelled by urgent necessity, I caused sinapisms to be applied to the anterior surfaces of the head, and also vesicatories to the same surfaces, and to the occiput. But unfortunately, and greatly to be lamented,

our measures proved unsuccessful." See the work already referred to, Hist. xviii.

On perusal of the above case, it will obviously appear to the reader, at least it so appears to me, that the patient's life was not lost for absolute want of activity upon the whole, but for want of sufficient vigour of its employment in the first instance, added probably to want of distinct knowledge of the proximate cause of the disease. It is stated, no doubt too theoretically, that the malady proceeded rather from phlogosis than from true inflammation of the brain. It is again remarked, that in connexion with other important symptoms, which we of the present day can sufficiently recognise as decided indications of acute hydrocephalus, that the accompanying fever, *ignava potius*, was not acute but mild, that the pulse was not frequent, that the urine was healthy and well coloured, but that the head was hot to the touch. The case, however, must have been attended with some amount of fever, as it really was, with what the author called "*phlogosis*." We may presume that Ferdinand had some hesitation about the utility; or at all events about the necessity of bleeding on any considerable scale; for after quoting the authority of Galen against

bleeding until a boy shall have attained his fourteenth year, he nevertheless comes to the conclusion of bleeding from the median vein; but not until the third day subsequently to order venesection from the other arm. On the following days, cuppings and scarifications were ordered to be applied to the shoulders; and on the sixth day leeches to the nostrils; on the eighth day venesection to the forehead, large scarifications were applied to the occiput, and an actual cautery to the nape of the neck; but the poor exhausted patient declined it. “*Verum proh dolor, omnia fuerunt irrita.*”

The management of the above case presents several important points of a practical nature for our consideration. We are told that the youth was in the thirteenth year of his age, and that when he became the subject of the disease he was bled: but we are not informed of the quantity of blood that was abstracted; it seems, however, most likely that it was insufficient; for on the third day the patient was again bled from the left arm: the first bleeding then, it is a matter of inference, had not much mitigated the disease, and we know from the further account given of the disease that it had not subdued it; then follow

the other severe measures already enumerated. We shall be better by and bye prepared to ascertain the reason of the failure of the entire practice. I believe I may, however, at present take upon myself to assert, that it failed of success because the bleeding in the first instance had not been carried to the extent to which the nature and peculiarity of the case required. The reader may here recollect, that in the case of Master Alfred Willson, described in page 94, that the cupping was carried to the extent of between ten and eleven ounces before it produced fainting. That child, be it recollected, was only three years of age. It is not probable that Ferdinand, trembling under the influence of the dogmas of Galen, would have proceeded to have an amount of depletion of blood, which would probably have required the abstraction of from twenty to four or five-and-twenty ounces to produce a similar effect in a lad of thirteen. But if he had been aware of the nature of the disease which he had to contend with, and perfectly convinced of the powers of his art, he would have no doubt carried his first bleeding to the full extent of producing fainting Had he done so, my experience in many scores, if not in hundreds of cases of

acute hydrocephalus entitles me to assert that without doubt he would have cured his patient.

I shall not now, however, stop to prove this point as it will be abundantly established during the further development of the more practical facts of our subject. Again, the second bleeding, if necessary, should have been had recourse to, not on the third day, but within a few hours after the first ; but if the first bleeding had been sufficient, which in all probability it would have been, provided it had been carried to fainting, it is more than probable, indeed I myself consider it quite certain, that the disease would have been arrested ; but it was allowed to go on until the third day, when no amount of blood-letting could have sufficed to arrest its progress.

Perhaps it may be recorded as a general principle, that if this disease be not stopped within three days from its commencement, as a case of active inflammatory affection, that there would be no certainty subsequently, of its being subdued by any decisiveness of measures, however proper or vigorous. Hence the case proved fatal for want of adequate activity in the bleeding, that is, for the want of bleeding to full fainting on

the first day of the disease, which, according to my experience, is always a safe practice, followed in the course of an hour or two, by the exhibition of an emetic and other energetic measures afterwards to be put in practice, of which the reader in the progress of this little volume will be put in full possession.

We derive little practical advantage from the dissections of Morgagni and his numerous correspondents on subjects of head affections, beyond the mere fact that many of the patients whose cases are recorded in his work had died the subjects of aqueous effusions into the ventricles of the brain. The greater number of the cases referred to were adults frequently far advanced in age, exhausted by chronic diseases, drunkards, apoplectics, and many others whose persons in all probability had not been known to the anatomist during life. Hence the extreme imperfections of the medico-pathological histories of Morgagni and his contemporaries. When the treatment by bleeding is made a subject of remark, it is simply to inform us that the patient was bled, but without any statement whatever as to the quantity of the blood abstracted, the ap-

pearance of the blood when drawn, the amount of relief obtained from the operation, and other items of information, which no well instructed physician of this country at the present day, nor any competent physician of any country, would omit very carefully to notice. I may be permitted also to remark, that the profession at the period of Ferdinand, that of 1599 and subsequently, were probably not aware of the power of mercury in subduing inflammatory diseases of great activity. At all events, we are not informed that mercurials were resorted to for any such purpose, in the treatment of the unfortunate cases which we have just recorded. On further consideration of the latter case, quoted from Ferdinand, it would be an omission not to remark that the practice adopted does not seem to have been suggested by any previous knowledge on the part of the physician that it was a case of inflammation of the brain, for he positively states that he did not consider it a case of inflammation of the brain, but a case of what he calls phlogosis, with an increased heat of the head. How remote this phlogosis might be considered from actual inflammation does not appear, or

whether it was supposed to have had any analogy to inflammation, we cannot positively discover; but it is to be presumed that something like such an analogy had probably the effect of furnishing the motives for the repeated bleedings which were resorted to. I would observe, finally, as an inference from the whole of the history, that the bleeding and its accompanying measures were properly enough indicated, but they failed in vigour of application, first in consequence of the blood abstracted in the first instance not having been in sufficient quantity; and secondly, because the ulterior bleedings and other measures were delayed too long, and when adopted they were resorted to in parts and parcels, and therefore totally uselessly.

In looking over the intermediate period, between this remarkable case of Ferdinand as published at Venice in 1621 and the date of Dr. Quin's Thesis on the Internal Hydrocephalus, there appears to have been not so much a want of improvement in the treatment of acute hydrocephalus, as a total absence of all knowledge of the subject. That a pyrexial disease attended by phlogosis existed as an affection of the head,

might indeed have been known to Ferdinand in 1599, of which, however, there is room to doubt. That the acute hydrocephalus had then no place in nosology, we have the evidence indirectly of the interesting history first submitted to the reader, which was given, not as an example of hydrocephalus, but as one expressly of amaurosis, or gutta serena. The interval between the period of Ferdinand and that of Dr. Charles Quin appears to have been a remarkably dark age; there being extant no sort of evidence, that I am aware of, that a single attempt was made during upwards of one hundred years to investigate any part of the subject of hydrocephalus. The reader is already in possession of the fact, that the idea of the new theory of hydrocephalus first occurred to the Drs. Quin, father and son. How much of the merit is assumed by the latter, and should be conceded to him, may be safely left to be decided by Dr. Charles Quin himself.

In the introduction to his Treatise on the Dropsy of the Brain, published at Dublin in 1790, we have the following statement: "The author of the following pages ventures to present them to the public, in hopes they will be found

to contain some new facts relative to a very interesting subject, facts, which if he has reasoned with accuracy upon them, have led him to important conclusions with respect to the treatment as well as the theory of a disease generally fatal, and which in his opinion has been at all times more extensive in its ravages than the earlier medical writers seem to have suspected."

He does not claim to himself the merit of originality in pointing out the true distinction between the chronic and acute hydrocephalus; for the ideas with respect to that point, as well as the opinions concerning the proximate cause of the acute disease, were first suggested to him by his father, a physician of very unusual sagacity and very extensive experience.

A general outline of the doctrine thus communicated to him was sketched out in his inaugural dissertation, published at Edinburgh in 1779.

"Since that period neither facts nor arguments have occurred of sufficient force to weaken the conviction of its truth under which the author first published a new theory of dropsy of the brain: on the contrary, that theory can now appear supported by an added strength of evi-

dence, which minute attention to the subject has enabled him to draw from books and observation in a variety of recent cases ; he therefore does not hesitate to submit to the candid consideration of the medical world what he has been able to collect on the subject."

After all this introductory matter, and subsequent to the lapse of eleven years since the publication of his thesis, we are presented with the following remarkable acknowledgment :

" Although it must be lamented that an effectual mode of cure is still to be sought for, yet a knowledge of the nature of the complaint having been established upon reasonable principles, much it is hoped may be done by way of prevention, particularly if an early and strict regard be had to such measures as have a tendency to counteract the cause ; and if by such measures a single individual should hereby be rescued from impending danger, the author will feel himself amply rewarded for whatever labour it has required to collect and arrange with some degree of precision the matter contained in the ensuing chapters."

Introductory to the new theory of dropsy in

the brain, already more than once referred to, the author gives the following succinct view of opinions which had been previously entertained of some of its remote causes.

"It appears," he observes, "that most writers on the subject, being led by supposed analogies between this disease and the other drop-sies, have ascribed it to the same remote causes. Thus a serous colluvies of the blood, ruptured lymphatics, cachexia, suppressed discharges, etc., have been set down by Whytt and other authors as remote causes of dropsy in the brain. I must agree with them, indeed, in attributing to these and such like circumstances the origin of that disease to which, in the beginning of this treatise, it has been proposed to confine the name of hydrocephalus; that being evidently a chronic complaint, and in every circumstance of its phenomena a genuine dropsy. But when the appearances, progress, and duration of hydrocephalus are candidly considered; when it is recollect that the patients attacked by it are usually of very lively intellects and remarkably healthy constitutions, such in short as are the most remote from any degree of cachexy, a suspicion will necessarily arise that

its causes are of a very different nature from those of dropsy, and much more closely allied to those of acute diseases. That this is really the case I shall here endeavour to prove, by deductions from an extensive series of facts, which I apprehend amount to a demonstration that the disease in question owes its origin to a morbid accumulation of blood in the vessels of the brain, sometimes proceeding to a degree of inflammation, and generally, but not always, producing an extravasation of watery fluid before death.

In the first place, it is to be observed that at the period of the disease in which the headache is most acute, every symptom of fever arising from an increased action of the vascular system is evident ; secondly, the majority of patients who are attacked by it exhibit on inspection strong appearances of plethora in the superficial vessels of the head ; and in some instances they have been subject to bleedings at the nose previous to the attack.

When these proofs shall have been strongly corroborated by arguments deduced from the phenomena which have presented themselves in

three bodies, the theory, it is presumed, will no longer appear to be a matter of speculation."

In confirmation of his idea of acute hydrocephalus, the author proceeds to quote two cases in which the usual symptoms of that malady had been sufficiently recognised during the progress of the disease, and yet after death no effusion of aqueous fluid had been found ; for in both cases, to the astonishment of those who were present, and prepared to find on dissection a redundancy of water within the cranium, none could be discovered within any part of the brain ; but the blood vessels were so unusually distended, that the whole of the cerebrum and cerebellum resembled an anatomical preparation in which the utmost force of injection had been employed.

In further confirmation of the same pathology, the reader is especially referred to the following cases :—“ J. C., girl, ten years of age, of a cheerful temper, and uncommonly sensible for her age, about the middle of January 1780 began to lose her appetite, and appeared less sprightly than usual. She often complained of chilliness, and at times, especially in the evenings, vomited

on taking food. On the 30th her forehead was somewhat bruised by an accidental fall; and on the 31st she complained of headache, which increased on the 1st of February, and became so severe on the 2d, as to confine her to her bed. From that day it continued without intermission to be almost intolerably attended with vomiting of every thing she swallowed. On the 5th, when I first saw her, besides the headache she complained of severe pains in her breast and belly. She had no stool since the 1st, and her urine was passed in smaller quantities, and with difficulty; the eyes appeared heavy, and somewhat intolerant of light, but without suffusion, and the pupils contracted well. The pulse was about seventy in a minute, rather full, and slightly irregular. She constantly lay on her left side, and was perfectly distinct in all her answers. She was immediately ordered to take five grains of calomel, triturated with ten of jalap, and an injection in the evening. She took the powder, and had a small stool, of a black colour and very foetid smell, without the assistance of the injection. She did not sleep, and her headache was not at all relieved.

“ On the 6th, the pulse was as before : she was ordered to repeat the calomel and jalap, ten grains of each ; she had four stools before she took the powder, the headache was a little relieved in the evening, but became as violent as ever towards night.

“ On the 7th, the pulse was nearly as on the previous day, but she was weaker when she attempted to sit up, which soon made her giddy and sick : the vomiting continued : the powder was repeated in the evening.

“ On the 8th, no stool had taken place since the 6th ; the pulse was still at seventy, irregular and weaker than formerly. A blister was applied to the whole head, the calomel and jalap were repeated : at night she had two stools.

“ It is reported on the 9th that the blister rose well. The sore was ordered to be dressed with blister ointment. Her headache was not at all diminished. The vomiting continued : a slight strabismus was observed ; but the pupils still contracted well. The pulse was more irregular. She was sometimes delirious. A drachm of the strong mercurial ointment was ordered to be rubbed on the inside of her thighs in the evening,

and repeated at night. Her left temple was cupped, and a little blood drawn from it without any relief.

“ 10th. The patient has had three stools, with the last of which she passed a lumbricus fourteen inches long, but did not vomit: she had been frequently delirious, and her feet had been colder than natural. The mercurial friction has been applied three times since the last visit, and her legs were fomented at night without any apparent effect.

“ 11th. She has become very indistinct in her answers, and her vision has begun to be impaired. Pulse about one hundred, weak and irregular. The mercurial ointment was applied as previously, and she took ten grains of the mercurial pill at mid-day, and the same quantity in the evening.

“ 12th. She has lost her speech and become paralytic on the left side. Pulse about one hundred and ten, and considerably quickened by a little wine, which was given to her at times, and which she swallowed readily. As mercury had been used in three different forms without its producing any tendency to salivation, she

was ordered in the afternoon to take six grains of the turpeth mineral, which vomited her slightly twice, and purged her once : the insensibility, however, was diminished, and the pulse became less frequent.

“ 13th. She took another dose of the turpeth mineral in the morning, and had one stool ; about three hours afterwards she moved her eyes at the approach of light ; but her pupils scarcely contracted. Her face was now flushed, and her tongue remarkably foul. The turpeth mineral was repeated at night to the quantity of ten grains without effect. At night she passed fœces, and involuntary voided the contents of the bladder.

“ 14th. About mid-day she died without any previous convulsions.

“ On the 15th the head was opened. The cranium was found to be uncommonly thin. The dura mater was found to be in its natural state. The tunica arachnöidea was amazingly thickened, several patches of inflammatory crust appearing on its surface, and under it was found a considerable quantity of fluid coagulable by heat. The left olfactory nerve was uncommonly large.

About three ounces of pure water were found about the basis of the brain, and about one ounce in the lateral ventricles, from whence the other water appeared to have come through the infundibulum. The pituitary gland had no morbid appearance either as to its size or consistence. The choroid plexus had several granulated substances like small hydatids attached to it. The cerebellum was less uniform in its texture than usual. Nothing more could be observed about the head ; the body was not opened."

In the above interesting narrative, Dr. Ch. Quin has certainly established several important particulars, namely :—first, the fact that the malady described was undoubtedly a case of acute hydrocephalus. This is most obvious from the nature and consecution of the several symptoms during the patient's life. Secondly, he has made it appear probable that the occasional cause of the disease was accidental, and imputable to the fall and the slight bruise which the patient received on her forehead on the 30th of January, inasmuch as she complained of headache on the 31st, which became rapidly more severe, so as to confine her to her bed on the 2d of February.

And thirdly, he has satisfactorily proved what appears pre-eminently important to the present section of my inquiry, that the proximate cause was an inflammation of some of the vascular tissues of the brain or its envelopes. This fact was made very evident by the examination after death. “The tunica arachnöidea was amazingly thickened, several patches of inflammatory crust appearing on its surface, and under it was found a considerable quantity of fluid coagulable by heat.”

But with respect to the treatment of the case, he has proved equally satisfactorily to my mind, that the young lady, the subject of it, was lost to all intents and purposes for want of early and ample bleeding, which was not resorted to for its cure. If on the day of the first attack, she had been bled ad deliquium, that is, on the same scale that blood was abstracted from Master Alfred Willson, in the case already described in a foregoing note ; and if other equally active measures had been adopted, there is no doubt in my mind but she would have recovered with equal certainty.

The second case adduced by Dr. Ch. Quin,

was that of an acute hydrocephalus, in consequence of, and probably occasioned by, the irritations of a mania of about two years duration, in a gentleman of forty-two years of age. "Mr. —— aged forty-two, died on the 11th of April 1781. He had been robust and remarkably athletic in his make, but for more than two years preceding his death he had been evidently maniacal, and as such had been consigned to the management of persons properly qualified to treat people in his situation.

" For about ten days immediately preceding his death, he appeared less lively than usual, and the people about him had reason to suspect that neither his hearing nor his sight was as good as usual. It was also observed, that although attempts were made every day to procure a discharge by stool, both by means of purgative medicines and by glysters, yet it could not be accomplished more than once in the course of several days. He so obstinately concealed any distressing symptoms which he might have had, and was so totally silent to any inquiries that were made about his health, that no farther particulars could be learned from him with respect to his immediate situation. It was observed,

however, by those who were about him, that his pulse at length became exceedingly quick and rather weak, and he shortly afterwards died without any convulsion or struggle whatever.

“On dissection, his brain was found unusually firm in every part of its substance. Mr. Hunter asserts this to be the fact in all maniacs whose heads he has examined.

“The blood-vessels throughout every part of the brain were exceedingly full of blood ; there was a considerable effusion of watery fluid between the arachnöid coat and the pia mater with some appearance of inflammation on the thalami nervorum opticorum ; and about five ounces of water were found in the lateral ventricles. The appearances on dissection were precisely similar in this case to those which have presented themselves in the brains of patients who have died under all the symptoms of apoplexia hydrocephalica.

“During the life of this patient, however, it was impossible to ascertain what his feelings were. The vomiting, usually an attendant symptom of his complaint, could not have been concealed by any effort of his ; and therefore it may be concluded that the tendency to it did not in this case

exist : it is likewise probable that if the headache had been so excessive as it usually is in this disease, neither his resolution nor his obstinacy could have stifled all complaint. In this case, however, I think it probable that the want of irritability in the brains of maniacs might have prevented the accumulation of blood in the head from producing those symptoms which it is probable it would have done in a patient whose intellect had not been previously deranged."

Such are some of the cases on which Dr. Charles Quin founded his new theory of acute hydrocephalus in his Treatise on Water in the Brain, published in the year 1793.

The reader will be kind enough to keep in his recollection the fact that the theory itself was suggested to him by his father, anteriorly to the date of his thesis published in Edinburgh in 1779 ; a fact which he himself very candidly and properly communicates in the treatise from which the above cases have been quoted. There is no doubt that the treatise was published in the year 1779, and we now see recorded that the two cases, one dated 1780 and the other 1781, which the reader has just perused, occurred subsequently

to the publication of the thesis, and anteriorly to that of the treatise. It seems to me certain that the new doctrine was published intelligibly and freely enough in the thesis, but whether for want of confidence in its value, or from ignorance of the probable extent to which its principles might be advantageously carried into practice, or for whatever other reason, it is now impossible to predicate ; but the fact is undeniable that neither of the Quins very materially improved his field of vision, in consequence of their new discovery. In the thesis, Dr. Charles Quin recommends bleeding as the first of his seven categories of treatment ; and yet his treatise after the lapse of eleven years furnishes no evidence that he himself had recourse to the abstraction of blood in a single case, excepting by the application of leeches to the temples in case 17, and in case 19, in which two leeches were applied to each temple, and also excepting in case 12, where the “left temple was cupped and a little blood drawn from it without any relief.” It will be made to appear in the further development of this tract, that the abstraction of blood on the miserable scale here ordered was much better

calculated to involve the new theory in utter discredit and neglect, than to sustain its pretensions or to ensure for it the respect and adoption of practical physicians.

Failing to produce any vigorous influence at home, at head quarters, at the place of its languid nativity ; what mighty agitations could be expected from it elsewhere in medical society generally, or in distant parts of the world ? We accordingly find that almost as soon as promulgated, its great influential principle having been so tamely propounded, the new doctrine almost entirely failed to gain the public attention. What, let us inquire, are the essential facts of the new doctrine ? The answer is supplied by Dr. Charles Quin himself, that the causes of acute hydrocephalus " are of a very different nature from those of simple dropsies, and are much more closely allied to the causes of acute diseases ; and that in fact it always owes its origin to a morbid accumulation of blood in the vessels of the brain, sometimes proceeding to a degree of inflammation ; and generally, but not always, producing an extravasation before death. Some post-mortem dissections, of which we have adduced

two, are then quoted, furnishing unquestionable proofs, first, of overfulness and consequent morbid distention; and secondly, of a certain degree of inflammation of the cerebral surfaces.

This circumstance was proved by the appearance at the time of dissection of preternatural adhesions of the meninges by a partial opacity and increased sickness of them, together with patches of inflammatory crusts, very similar to those which are found in the abdominal viscera of persons whose death has been the consequence of enteritis, or on the lungs and pleura of those who have sunk under pulmonic and pleuritic inflammations. We have in Dr. Quin's list of cases appended to the volume published in 1790, at least two examples of acute hydrocephalus distinctly enough stated, especially with respect to their post-mortem appearances, which ought immediately to have strongly and prominently placed before his mind the practice which alone could have been considered sufficiently active to meet the demands of the theory. In one, or rather in several of those cases, we have an overfulness of blood in the vascular tissues of the brain. Does not common sense

indicate in such a case, the necessity of abstracting from this plethora, the whole of the excess over and above the quantity which ought properly and healthfully to circulate in the vascular tissues of the brain? The answer is obvious, and it was given sufficiently intelligibly in Dr. Charles Quin's inaugural dissertation, by being placed first and foremost of all that gentleman's curative measures.

The second proximate state quoted by Dr. Charles Quin in connexion with the overfullness of the vascular tissues of the brain already mentioned, was that of inflammation.

Patches of encrusted coagulable lymph, furnishing evidence of intense inflammatory action of adjoining tissues, and illustrated by Dr. Charles Quin by references to similar appearances in distant parts of the body, ought to have induced him without a moment's delay and without any hesitations or fears, to have had recourse to ample abstractions of blood in all the cases which he had subsequently the opportunity of treating. Do we ever hear of a remedy more frequently recommended or considered more absolutely necessary for the subduction of the inflamma-

tion of serous tissues, as those of the abdomen and chest, than bleeding on a large scale? On the contrary, is it not the usual practice in either of these inflammations to place bleeding among our first measures? Then how did it happen that the abstraction of blood was only recommended, and never in a single instance made a measure of active treatment by Dr. Ch. Quin himself? For it is a matter of recorded evidence, that in all the cases quoted in that gentleman's treatise of 1790, with one trifling exception in favour of cupping from the left temple (see case 12 in the Appendix, p. 139), when a little blood was drawn without relief, he omitted general bleeding altogether. We may, I think, very well infer, that the treatment by active bleeding was not adopted in his practice generally, although recommended in the original thesis of 1779, by reason of its not being again recommended in the publication of the same gentleman in 1790, or at least not recommended more than once in the intermediate period of these respective publications. Dr. Ch. Quin having thus in reality denounced his own doctrine, by having in practice shrunk from fulfilling the most im-

portant indication which his theory required ; could it be expected that so striking an innovation upon the received doctrines of his day should have been generally adopted, and become established as a most essential principle in the treatment of the disease ? It may be mentioned perhaps as a reason in explanation of the conduct of the Drs. Quin, and to some extent in palliation of the desertion by them of their theory, that bleeding in pyrexial diseases was not a little out of fashion about the period of Dr. Charles Quin's publications : for it should not be forgotten that the period in question was identified with the heyday of the Brunonian system ; when very little quarter was given by its friends to their professional opponents, the friends of active antiphlogistic practice.

In further opposition to the practice by depletion, there was prevalent at that period, as there is at the present day, a strong prejudice against any considerable abstraction of blood in diseases even of acute inflammation of very young children. Assuming that active practice by bleeding in inflammatory diseases, perhaps for the reasons already alluded to, or possibly for

some others, became suspended, or almost totally suppressed, about the time of Dr. Charles Quin's publications ; it nevertheless does not follow that the new theory of hydrocephalus did not produce some good results ; and that it might not even in its state of abeyance as to one great branch of antiphlogistic treatment, exert nevertheless a valuable influence, by directing professional attention to the employment of divers other measures, having an indirect, although no doubt a subordinate tendency to produce similar results.

It is my opinion that the suspended influence of the new theory really had such an effect ; for we find that many of the leading minds of the profession became interested about the time in question, or very soon afterwards, in the success of a variety of measures, subordinate indeed in my estimation to bleeding ; but measures, nevertheless, to which considerable importance might be attached, as means of subduing the more active stages of acute hydrocephalus.

The application of large blisters to the head were amongst those means. I cannot say that I approve of the practice by vesicatories as being greatly to be depended upon for the cure of hydro-

cephalus, for reasons which I shall avail myself of a future opportunity to mention.

About the same period, or soon after, it became a pretty general practice in England, to have recourse to the use of mercury, in a variety of forms, to subdue active inflammation. To the exhibition of calomel and other mercurials on principles almost empirical, was proposed the addition of opium to allay irritation, by Dr. Percival and others ; of digitalis, by Dr. Withering ; and of fœtid gums and other spasmodics of various pretensions, together with sundry other items of doubtful utility, selected with little discrimination by persons of inferior name from among the dead lumber, the albiora Græca of the profession.

But to proceed with our proof, that inflammation with pyrexial over-distension of the vascular tissues of the encephalon, terminating in effusion of one or more fluids into the ventricles of the brain, is the proximate cause of acute hydrocephalus. This fact is tolerably well made out in Dr. Charles Quin's Treatise. He gives altogether twenty-one cases of hydrocephalus, of all sorts and varieties. The first three are cases of chronic hydrocephalus. The fourth is also a

case of chronic hydrocephalus, which, however, was originally produced by repelled scald head. The fifth, extracted from Morgagni, was probably a case of acute hydrocephalus ; for in his dissection he speaks of two different fluids which he encountered in different parts of the head. In the sixth case, which is also extracted from Morgagni, the author, in speaking of the fluid he found in the ventricles, describes it as aquâ plenissima subfuscâ. This was probably an admixture of the ordinary fluid with serum, if not also with coagulable lymph. But a statement to that effect is not made, and therefore the actual character of the case is left in some degree of uncertainty. The eighth case was also probably a result of inflammatory action. But it is left by Dr. Charles Quin in considerable uncertainty. See Quin's Treatise, p. 119. The ninth case is given beautifully by Epiphany Ferdinand ; and it was one attended by undoubted symptoms of acute hydrocephalus. But it is not accompanied by an examination of the head after death. By reason of such omission, it cannot be offered in evidence of any known proximate cause. Case No. 10 was professionally superintended by Dr. Charles Quin

himself. On examination of the head after death, innumerable small hydatids of the size of grains of mustard seed were formed on the coats of all the blood-vessels on the surface of the brain, and a larger quantity than natural of serum was found in the ventricles. The consecution of the symptoms as given in the pathological history of the case admits of no doubt that it was a genuine example of acute hydrocephalus. The same may be said of the eleventh case, under the professional management of Dr. Henry Quin. But in that case, likewise, no dissection is given in illustration of the proximate cause. The twelfth case is well illustrated as to its proximate cause: but the treatment was as much mismanaged as if the physician had never in his life stumbled upon the idea of his own theory of hydrocephalus. The following are a part of the post-mortem appearances. "The tunica arachnöidea was amazingly thickened. Several patches of inflammatory crust appeared on its surface; and under it was found a considerable quantity of fluid coagulable by heat." . . . "About three ounces of pure water was found about the basis of the brain, and about one ounce in the

lateral ventricles, from whence the other water appeared to have come through the infundibulum. The choröid plexus had several granulated substances like small hydatids attached to it." In the dissection of the thirteenth case, namely, that of the maniac who became the subject of acute hydrocephalus at the age of forty-two, there was observed the appearance of inflammation on the thalami nervorum opticorum. What precisely the appearance was, the reader is not informed. In the dissection of the sixteenth case, the proofs of inflammation are well sustained : see p. 146 of the Treatise of 1790. "The blood-vessels were remarkably distended. One side of the pia mater was preternaturally thick and opaque." The three following cases, Nos. 17, 18, and 19, were not examined after death. In the dissection No. 20, the blood-vessels of the head, it is simply stated, were remarkably full ; and in the ventricles of the brain there were above four ounces of water as nearly as could be guessed. Of case 21, the head was opened after death ; and an extraordinary quantity of water was found in the ventricles of the brain."

The intention of this Essay, as stated in its title-page, is twofold : first, to establish the fact that acute hydrocephalus is an inflammatory disease ; and secondly, that it is curable by the same means and measures with other diseases of inflammation. The fact I fully acknowledge is not new. It was tolerably distinctly announced in Dr. Charles Quin's Thesis, and it was again communicated to the public by the same gentleman in his Treatise of 1790. But this latter communication was made not in a way to secure much professional attention to its merits ; and it has been already seen that no system of effective practice was reared on its foundation for many years subsequently. We have moreover seen that an elderly metropolitan physician, of no inconsiderable reputation in his day, stoutly denied the truth of the new theory as late as the year 1814. See the Treatise on Hydrocephalus, published in the course of that year by Dr. Carmichael Smyth, already referred to at p. 21.

It is not many years since Dr. Carmichael Smyth practiced in London, and was a physician of no little weight and authority. His opinions are yet far from having been exploded, and not having

been publicly controverted, that I am aware of, the practical interests of the subject are such as to make it the duty of a subsequent writer to reconsider them with calmness and deliberation ; and, finally if possible, to reply to and dispose of them. At the time of Dr. Carmichael Smyth, it was not so much the practice as it is at present, of medical men to urge the expediency of post-mortem examinations ; nor was it, at all events, the practice of physicians to investigate the appearances presented on such occasions with much minuteness : and it may be added, that Dr. Smyth's position in the profession was not one to involve him personally under the obligation of being perfectly qualified to state the opinions which he maintained, with the tone of confidence with which he has recorded them. During a considerable section of my own professional life, I have had too many opportunities of witnessing post-mortem examinations, which furnished undoubted proofs of intense inflammatory action of the vascular tissues of the encephalon having been sustained during the pyrexia of acute hydrocephalus.

The following narrative is submitted to the

reader as the result of the last opportunity of this kind which has occurred in the practice of my special department at University College Hospital.

Emily Nye, three months old, was brought to University College Hospital by her mother, who resides at No. 9, Sidmouth Street, Gray's Inn Road, on the 28th February 1840. The child, as stated by the mother, had been exceedingly delicate from her birth ; and especially subject to bowel affections. The pupils were greatly dilated, and the general appearance of the eyes was such as to give the impression that she could not see ; and having taken some pains to ascertain that point, I expressed my opinion publicly to that effect before the assembled students, and stated it as a reason for a highly unfavourable prognosis. The present symptoms were a constant diarrhoea with offensive slimy motions ; morbid heat of the head, and more especially of the forehead, with occasional vomiting. The child lay with her head thrown back ; and was the subject from time to time of fits of screaming. Her tongue was white, and the general surface of the body was somewhat raised in

its temperature. The nature of the disease not having been suspected till this time.

Without entertaining any hope whatever that I should be able to effect a cure in so hopeless a case I, nevertheless, considered that some good might possibly arise, in mitigation of the severe sufferings of the little patient, from the abstraction of a small quantity of blood from the surfaces behind the ears by cupping. I accordingly ordered her to be cupped to the amount of three ounces and a half; presuming that it might relieve the symptoms, although it might not suffice to cure the disease. A third of a grain of tartar emetic, with six grains of the powder of ipecacuanha, were prescribed as an emetic, to be exhibited as soon as the child and her mother should arrive at their own residence. Eight grains of calomel and ten grains of the compound powder of tragacanth were ordered as a powder, to be divided into four portions; of which one was directed to be given to the infant every three hours. After this period the patient was visited frequently by my clinical clerk.

On the 22d of March the child was again brought to the hospital. The somnolency, of

which the mother had only just alluded to without laying much stress upon it, had now greatly increased, and the child was seen to knock her head about in all directions without much intermission. In the further treatment of the case, the exhibition of calomel was persevered in, in the quantities first prescribed ; and a blister was ordered to be applied to the nape of the neck.

On the following day the child's right arm was observed to be thrown about in bed, while the other remained unmoved. The breathing became gradually embarrassed ; the infant's powers on this day obviously sinking, the respiration being more and more impeded by a mucous rattle, and on the following morning it expired in a slight convulsion.

It should be recollected that this was declared a hopeless case during the first visit.

Inspection of the head after death :—The skull-cap was removed with great difficulty, on account of the firm adhesion between it and the dura mater : it was strongest along the course of the superior longitudinal sinus and opposite the torcular Herophili. It was also firmly adherent opposite the right parietal protuberance, where it was thickened, rather rough, and presenting a

granular appearance. On removing the dura mater and the parietal layer of the tunica arachnoides, several patches of coagulable lymph were seen on the visceral layer of this tunic. The membrane itself likewise, in several different parts of it, was more or less opaque. The lymph was nearly equally diffused over each hemisphere. At the under surface of the brain there was a patch of fibrine observed upon the middle part of each middle lobe, which on the right side extended as far as the pons Varolii. Another collection of lymph, of a rather yellower appearance, was situated between the two lobes, at the median plain of the cerebellum. The medullary portion of the brain was nearly of natural consistence, but the cineritous portion of it was something softer; the several ventricles of it contained very little fluid; perhaps the quantity altogether not exceeding half a drachm, and of this a very small portion had found its way into the theca spinalis.

This dissection was performed by my present clinical clerk, Mr. Humble, son of Dr. Humble, of Worthing, acting under the direction of my own son, Mr. John Hall Davis.

I have no inclination to multiply evidence in

favour of the inflammatory origin of hydrocephalus, founded on results of cases which have from time to time occurred in my own practice, inasmuch as the majority of such opportunities are become simply matters of recollection to me, the post-mortem examinations of the last nine or ten years within my experience having been few and far between ; the great majority of cases having yielded to the treatment adopted. The required evidence will, therefore, be supplied from other competent sources ; from the united testimonies of writers of unquestionable eminence and authenticity.

The reader will please to recollect that it is a principal object with me to impress the profession with the fact, that acute hydrocephalus is not an ordinary dropsy, but the result of an acute inflammatory disease of the vascular tissues of the encephalon. A notion of this kind somewhat doubtfully exists among some members of the profession. But the impression in question does not amount to a living practical faith in this country ; if, indeed, we may venture to presume that it even approximates to a general opinion.

The publications in which the principal facts in support of it are to be met with, are very im-

perfectly known to the British medical public ; and the facts themselves have been so over-burdened and oppressed with various irrelevant matters, that I am quite sure that many of the most important of them have never been placed advantageously and in a striking and convincing point of view before the English professional reader.

It should not be forgotten that Dr. Carmichael Smyth in 1814 asserted his confidence of the unsoundness of the doctrine now about to be maintained by counterfacts and experience, in as strong a language as could well be used. In referring to the testimony of two or three unquestionably competent writers on the subject in debate, I shall confine myself almost exclusively, in many cases, to brief selections from their post-mortem examinations. Whenever this intention may appear not to be strictly adhered to, the motive for its non-observance will generally be expressed at the time. In a certain proportion of the cases to be adverted to, a few of the principal facts of the previous history of the disease will be succinctly stated ; in order to put the reader in more distinct possession of the subsequent pathological illustrations.

With this explanation, I proceed to invite the

especial attention of my readers to the following selections from the pathological histories and dissections of Gölis, an authority which even my old friend Dr. Carmichael Smyth himself, if he were now alive, would feel disposed to treat with unfeigned respect.

Case 1. The occasional cause of the malady was a fall down the stairs from the arms of a thoughtless maid servant. The child died in forty-eight hours after the concussion. The age of the infant at the time of the accident was eight months. Dissection :—Marks of a previous bruise on the outside of the head were to be seen ; and after taking off the skull cap, we found the blood-vessels of the membranes and of the brain itself enlarged, and turgid with blood ; in the sinuses, particularly in the longitudinal sinus, the serum, lymph, and the red part of the blood were distinct one from the other, and the two latter were seen swimming in the first. The coagulable lymph resembled an earthworm ; the plexus choröides was pale, and on it sat many little balls of coagulable lymph ; the colour of the medullary substance was reddish ; the consistence of the brain was soft, as it always is

when concussion is the cause of the disease. There was no extravasation of blood in the ventricles ; there was discovered a small quantity of turbid serum,\* scarcely amounting to a table spoonful ; and there was likewise a considerable effusion of plastic lymph, which not only covered the outer surface of the brain, but also that of the corpus callosum ; and which moreover lined the cavities both of the cerebrum and cerebellum. The inner pericranium of the right parietal bone and of the squamous part of the temporal, where externally the bruise had been, was greatly inflamed.

The turbid appearance of the small quantity of serum found in the ventricles, we may with very little doubt ascribe to the violence sustained from the accident. See a parallel case in the Appendix to Dr. Charles Quin's Treatise on the Dropsy of the Brain, Part II. p. 136. In that case it is stated that "the tunica arachnöidea was amazingly thickened, several patches of inflam-

\* I have repeatedly had occasion to notice this appearance of turbid serum in cases of hydrocephalus which have supervened upon accidents similar to the fall, to which the disease is very reasonably imputed, in the above narrative.

matory crust appeared on its surface, and under it was found a considerable quantity of fluid coagulable by heat." It is further stated, that "about three ounces of pure water were found about the basis of the brain, and about one ounce in the lateral ventricles, from whence the other water appeared to have come, through the infundibulum." The above case is given by Gölis in illustration of a certain variety of very intense hydrocephalus, to which he has given the epithet of tumultuous. It is one of great rapidity as to its progress, and speedily destructive of life as to its results.

2. This case, although unfortunate, is full of interest; and as I shall probably have occasion to refer to it hereafter, I shall take the liberty of quoting the whole of it, together with its post-mortem examination. A. D., fourteen months old, vaccinated, plump and strong, was seized one morning about five o'clock, after a night of great restlessness, with a violent fever and general convulsions. These tumultuous symptoms urged the father of this motherless infant to seek immediate assistance for his child; and in less than half an-hour after the accession of this high

degree of phrenitis, four leeches were applied behind the ears, which drew more than three ounces of blood. Calomel, emollient medicines to drink internally, and mustard cataplasms applied to the feet, soon diminished all the symptoms of the disease. This improvement, however, was but of short duration ; the fever soon increased, the convulsions returned, deafness and spinal cramps came on. Hemiplegia with spasmodic contraction of the pupil, blindness and distortion of the face followed in rapid succession, and in thirteen hours after the accession of the disease the child died.

Dissection :—The cranium, when its coverings, of which the vessels looked forcibly injected, were raised, was of a blueish colour ; the sutures were separated ; the sinuses contained much coagulated blood with separate plastic lymph ; which were surrounded by a considerable quantity of serum. All the blood-vessels of the brain and its membranes were enlarged and turgid with blood. On the convolutions of the brain, on the surface of the corpus calosum, and on the surfaces within the lateral ventricles, was found a great quantity of coagu-

lable lymph, like a preternatural membrane, as also at the basis of the cranium. The pale plexus choröides was covered by the same: and in the ventricles of the brain, the septum of which was broken through, there were found about three ounces of turbid serum.

The cases 3 and 4 of the same author exhibited at their post-mortem examinations very similar results with those of cases 1 and 2 just described.

5. Matthew Sch, one year old, healthy, well nourished at its mother's breast, vaccinated, was seized with a violent fever, during which, in a few hours, there appeared on the surface of the body a pimply eruption like wind-pox, which soon burst, and left behind this part of the process, many gangrenous places, surrounded by broad inflammatory circles. This malignant cuticular disease sustained something of repulsion; and some of the severest symptoms of the water-stroke soon supervened. I am sorry that I cannot afford either space or time to give the whole of this history. It is very interesting.

Dissection:—This opportunity could not be obtained till after the lapse of three days, and at some distance from the house of the parents.

Much turbid serum and a very soft consistence of the brain distinguished this dissection. The latter circumstance may perhaps be attributed to the lateness of the opportunity seized to perform that duty.

6. This was the case of a feeble female child of nine months old, delicate and irritable. She had been vaccinated when only 42 days old. She had sustained much inconvenience from dentition complicated with hooping cough; which was attended with much pyrexial irritation. In the midst of these symptoms the infant was quickly carried off in convulsions and spinal cramp.

Dissection :—The blood-vessels of the membranes and of the brain were more turgid than is common in the water-stroke, and the serous extravasation amounting to about two ounces; and yet there was found no membrane of plastic lymph, which frequently in acute hydrocephalus is seen to line the ventricles of the brain; but it was well enough seen effused into the spaces among the ridges of its convolutions.

7. This case was in all probability the result of an unfortunate vaccination. E. S., a year old, born of a sickly mother, 40 years of

age, of the Greek religion : but nursed at the breast of a young woman who was healthy, robust, lively, and blooming. The infant was vaccinated in the winter : the progress of the vaccine disease was regular for many days : and on the twelfth day after the insertion of the virus there was seen on the arm four beautiful cow-pocks: and on the same day there occurred a fever which was more violent than Dr. Gölis had remarked in many thousand vaccinations. He attributed this appearance to the accession of dentition ; but anticipated no bad result from it. Suddenly, however, the bright redness of the inflammatory circle round the pustules vanished : vomiting soon followed, and the child fell into a state of utter insensibility. This insensibility, however, ceased for a short time ; during which the little patient furiously bit at every thing which came near her mouth. She was soon seized with spinal cramp and palsy of the left side. Inspection of the body after death was not permitted.\*

\* I have taken the liberty of quoting this case, although not illustrated by a post mortem examination, on account of its remarkable interest and peculiarity ; it being a complication which I have never seen in England.

8. J. B. and E. T., both blooming infants of six and seven months old respectively ; each was suckled by its mother, who had afforded it a good supply. They both suffered the same fate as the subject of case 7, during the inflammatory period of the cow-pox. They were both seized, without the intervention of dentition, with violent fever, in which they unceasingly screamed for some hours, curving themselves piteously, but without biting ; and also vomiting their milk and medicines. Violent convulsions made them insensible. Spinal cramps succeeded, and palsy of the right side. After the lapse of five and thirty hours they expired.

Dissections :—In both cases the results were the same, the serum was turbid and amounted to between two and three ounces. The substance of the brain was of firmer consistence than in the case No. 4, which occurred under circumstances of a similar complication.

9. This was a case of acute hydrocephalus, attended with symptoms of great severity, and complicated with much irritation from dentition. The infant was two years old.

Dissection :—After removing the skull-cap, the

vessels of the membranes, as well as of the brain itself, were less full of blood than usual ; yet there was coagulated lymph in great quantities and in thick flakes, interspersed amongst the convolutions of the whole upper surface of the cerebrum, as well as on that of the cerebellum. Even the ventricles of the brain, the corpus callosum, and the corpora striata, were coated or lined with membranes of coagulated lymph ; seldom to be seen so distinctly as they were seen in this case. The quantity of fluid contained in the ventricles was between three and four ounces. The brain was soft, the pituitary gland natural ; but the pale plexus choröides was covered with lymph. The sutures of the cranium were separated. Between their indentations was found, in very small quantity, a fluid tinged with blood ; through which the projecting bones could be distinguished, just as on maps, the boundaries of two neighbouring countries are marked with coloured points. The lungs were full of blood. The abdomen, as in all who die of this disease, was quite fallen in : but on none of its viscera was any morbid appearance to be observed.

10. The subject of this case was four years old, and had been vaccinated. He was seized in October with an acute rheumatic fever, accompanied by a local inflammation of the velum pendulum, the uvula, and the tonsils. This little patient's mother, in expectation of improvement, suffered him to lie seven days without medicine, and without the requisite attention to regimen. It was not before the eighth day of the disease that any application was made in its behalf to the Institute for sick children. The patient was then treated antiphlogistically, both as to the use of medicines and of external applications : but on the day on which he first took his medicines, he began to complain of pains of the head, occupying both the forehead and the occiput ; and of inclination to vomit, followed by actual vomiting. His pulse, which hitherto was febrile, became slow, intermitting, and irregular. To those pathognomonic signs of the second stage of acute hydrocephalus, there soon supervened some additional symptoms indicative of the same period of the disease. All the usual remedies which I considered best adapted to the period in question, were employed methodically and in proper quan-

tities ; and after the lapse of twelve hours subsequently to the accession of symptoms characterising the second stage, several of those of the third stage made their appearance.

After the lapse of six days there was a return of consciousness and of capacity to see and to converse. But after suffering the symptoms of the last stage for thirty-six hours the patient expired.

Dissection :—With the exception of some traces of inflammation of the periosteum of the petrous portion of the temporal bone, and of the sphenoid bone, and of the brain being very soft, all the other appearances were the same as are always found in dissections of this kind. The parts of the throat which had been inflamed were still very much so, and lined in many parts with a coating of coagulable lymph.

11. The subject of this case was an infant of eight months old, who had been regularly vaccinated. In the month of October she was seized with a tertian fever accompanied by symptoms of arthritic inflammation of the lower extremities. She was taken to the Institute for sick children at Vienna. Her health was supposed to have suffered greatly from a damp

dwelling and from bad food. To these circumstances were now added measles and œdema of the feet and hands; on the accession of which the intermittent and other pyrexial affections vanished. The symptoms of a rapidly destructive hydrocephalus, even those of the wasser schlag, supervened.

Dissection :—The brain was so soft, that after removing the membranes it ran in different directions like thick pap; when a great quantity of water which was contained in the several ventricles made its escape. The sutures of the cranium were firmly closed. According to the statement of the mother, she had never exhibited any strong indications of mental talent. She had never been cheerful, never properly digested; she frequently returned her daily food; she had never grown as she ought to have done; and, upon the whole, there was reason to suspect that there had been for some time gradually accumulating a collection of water in the ventricles of the brain.

12. This case was one of a little girl of four years old. In the first year of her life she was vaccinated. Some short time subsequently, she suf-

ferred scrofula of the glands from improper quality and quantity of food. In the progress of her malady the abdomen swelled, and she lost flesh and strength. Symptoms of hydrocephalus supervened. The details of her case are given at considerable length. After a disease of great severity she died, much exhausted, without convulsions.

Dissection:—Permission to inspect the head could not be obtained until four days after death. The results were great fullness of the blood vessels, a soft brain, a small quantity of coagulable lymph, together with about four ounces of the usual fluid in the ventricles of the brain. The plexus choröides was pale, and almost changed into mucus. The sutures of the cranium were firmly closed.

13. This case was one of a delicate child of five years old, who had been often subject to ailments such as frequently occur to children of weak powers of digestion.

Dissection:—The results were exactly the same with those of the foregoing case.

14. The subject of this case, a little girl five years of age, was delicate, irritable, full of

talent and of good temper. She fell ill subsequently to having received a blow on the head. This, however, had taken place two months before. Her first observed symptoms were those of a gastro-catarrhal fever, which, after the lapse of a few days, were followed by decided indications of a head affection. The malady ran its usual course. But before the transition into the last period, there returned consciousness, speech, sight, voluntary motion of the hands and feet, together with thirst and appetite for food. The patient slept calmly, and for a long time, and awoke collected out of her sleep. Her pulse was natural. She complained of languor, but of no pain. After all these false promises of amendment she relapsed, and sank into the calm of death.

Dissection:—The results of a post-mortem examination were very similar to those of many of the foregoing dissections, without any material difference. Evidences sufficient were exhibited of an inflammatory condition of the vascular tissues of the brain, together with an abundant effusion of the usual fluid into the ventricles. A circumstantial description of them would here occupy too much of the reader's time.

15. The subject of this case had been vaccinated. She was eighteen months old when she was admitted into the Institute. It appeared that during an entire month she had suffered from diarrhoea, and during the whole of a year she had been the subject of rickets from glandular disease of the abdomen. During the latter stage of the hydrocephalus, including full six days, the patient lay in an irrecoverable state of insensibility. That of palsy followed, and under the gentlest symptoms incident to that period of the disease, after the lapse of about three days, she quietly expired.

Dissection:—This was distinguished from the greater part of the foregoing dissections by the fact that between the pia mater and the brain, there was encountered a quantity of coagulable lymph. The brain itself was very soft. There was much of the usual fluid found in the ventricles. The plexus choröides, together with the pituitary gland, could not be discovered in the pap-like mass of the brain.

16. A case of very bad management in the bringing up of its subject, by the permission of all sorts of indulgences in eating and

drinking ; and of subsequent injudicious treatment of the disease after its first accession. The pathological history of this case is too long to admit of our entering at full length into its particulars ; it being my principal object in this section of our enquiry to trace the proximate cause of the malady.

Dissection :—The post-mortem examination was performed by two physicians and two surgeons. After removing the scalp, the cranium appeared in many parts of a dark blue colour, from its blood-vessels being very turgid. In the sutures, which were a little open, there appeared blood. The blood-vessels of the membranes, as well as of the brain, after removing the scull cap, appeared very much enlarged and in an unusual degree filled with blood. The sinuses, particularly the longitudinal, were full of coagulated blood, with here and there coagulated lymph floating in the serum. There were more than four ounces of the usual limpid fluid in the ventricles. The plexus choröides was very pale, and the surfaces of the ventricles were coated with plastic lymph. The consistence of the brain was pretty firm. It expanded after taking off

the cranium to such a degree, that in a few minutes afterwards it could not be brought under the scull cap. At the basis of the cranium lay much coagulated lymph, enveloping the nerves and blood-vessels.

17. A case of hydrocephalus of a little boy four years old. The accession of the head affection was the immediate consequence of sudden cessation of a discharge from an ulcer in the leg. Before the transition into the last period of the disease, there occurred in this patient, as in a former case already noticed, consciousness, speech, sight, the power of swallowing fluids, and appetite for food. But this happy change was but of short duration. Violent spinal cramps and palsy preceded an approaching death ; which followed on the seventeenth day of the disease.

Dissection :--The appearances were the same as in several of the foregoing cases.

18. The subject of this case was an infant of one year old. He had been vaccinated in the fourth month of his age, and subsequently was well fed at his mother's breast. It became the subject, when remarkably full of flesh, of an ap-

pearance of little pimples on the back part of its fat neck, which, in consequence of its deep furrows on account of the child's fleshiness, ulcerated and suppurated profusely. This local affection was treated mildly and quietly. But from impatience of the slow progress of the cure, remedies were applied without the knowledge of the physician, which rapidly dried up the ulcers. Scarcely eight days after the drying up of these ulcers, the child lost his activity and his appetite ; slept uncomfortably ; began to hang down his head ; to dislike strong lights ; became constipated and voided very little urine. All these symptoms were attributed to dentition, and no physician was consulted. Medical assistance was not called till all the symptoms indicative of the inflammatory period had arrived, and that of effusion was already at hand, and could no longer be prevented. With violent convulsions and spinal cramp, the stage of palsy began ; and on the fifteenth day of the disease death supervened.

**Dissection :—**Much coagulated blood at the basis of the cranium, great turgescence of the vessels both of the brain and of the membranes. The sutures appeared a little open and painted

with the appearance of blood occupying the interstices. In other respects the results were similar to those of case 16.

19. As a caution to parents in respect to accidents, I shall take the liberty of transcribing the whole of the following case: "A young lady of eight years of age and very healthy, fell from the height of three feet with her head foremost against the ground. To avoid a scolding for her carelessness, she kept this accident a secret from her mother. Six weeks afterwards she became the subject of the first symptoms of hydrocephalic turgescence, which were soon followed by nausea, coated tongue, and vomiting. A hot forehead, severe pains of the head and nape of the neck, alternating with pains of the stomach, and great sensibility of the eyes to light, were the most striking symptoms of the disease. The physician who was first called, and who seemed to be little acquainted with the frequency of acute hydrocephalus, explained these appearances as being symptoms of a gastric fever, and directed his attention merely to the abdomen, without paying any regard to the state of the head. He said that the inclination to vomit was a hint of

nature, and that the head-ache was a sympathetic pain of which the cause lay in the stomach. The coated tongue served to corroborate his view, and determined him to prescribe an emetic. After this had operated, the symptoms of effusion soon appeared. Those were explained as symptoms of a typhoid fever, and for that reason were treated by strong internal and external stimulants. The symptoms of the last stage were, in this case, as they always are, where strong stimulants are employed in large doses during the first period of the disease, very violent.

Dissection :—After taking off the general covering of the head, the cranium looked blue, the sutures were here and there separated, and a watery fluid, tinged with blood, appeared beneath. The vessels of the dura mater, of the other membranes, and of the brain, were much enlarged and overcharged with blood. In the sinuses swam the red part of the blood ; and coagulated lymph was seen in the serum transformed into the shape of a worm. Coagulated lymph appeared also in great quantity in the ventricles of the brain, on the surface of the corpus colosum, and at the basis of the cranium. The quantity of transpa-

rent fluid contained in the ventricles was six ounces."

20. This was the case of a fine boy of four years of age. He had been vaccinated. The disease, commenced in consequence of his having heated himself by running in a spacious garden. Covered with perspiration, he sat down with bare head and breast, at the same time exposing his back, with only a thin shirt on, to a pouring rain till he was wet through. Next morning he complained of a sense of weight of his head, and tension at the nape of his neck; transient lacerating pains in the forehead, sense of feebleness, with absence of thirst and appetite. There was slight fever, in which, however, the pulse was of natural quickness and fulness. But there was at this time some irregularity in the pulsations of the artery, inasmuch as some of them were scarcely to be felt, and others were entirely omitted. After a long attendance and several professional consultations, the child died on the forty-eighth day of the disease. This case was treated on the principles of the Brunonian system, but greatly in opposition to the advice and opinion of Dr. Gölis. The dissection was at-

tended by the physician who had insisted on the exhibition of bark in the first consultation, and by a surgeon who is described as a stiff Bruno nian. The blood vessels of the covering of the cranium were turgid, and its bones, when the scalp had been removed, were blue. The sutures were separated bone from bone to the distance of a line, and the interval was filled by a bloody extravasation. The blood vessels of the membranes, as well as those of the brain itself, were uncommonly large, and turgid with blood; as were also the sinuses in which cruor and much lymph floated in the serum. Between the pia mater and the brain, which was firm and elastic, there was a great quantity of coagulable lymph. On the corpus callosum there was a layer of the same material about as thick as the blade of a knife. It was equally thick at the basis of the cranium, where it enveloped the blood vessels and nerves. The ventricles, in which more than six ounces of transparent fluid were contained, were lined by the same material through all their length and incurvations. The plexus choröides was very pale, and entirely covered with lymph. The pituitary gland was in its natural state, but

nevertheless covered with lymph. The septum of the ventricles was broken through. The white substance of the brain was of a reddish colour. The viscera of the thorax and abdomen were perfectly healthy. The incredulous physician began after this to believe in the fact of acute hydrocephalus. Whether the surgeon, who soon after went to Russia, was converted, Dr. Gölis had not been informed.

21. F. R., four years old, after an inflammation of the lungs, succeeded by a spasmodic cough, but having perfectly recovered his health and strength, fell out of a cart two or three feet high, with his head foremost, upon a stone pavement. Cold water was applied to the bruised part; and fearless of worse consequences, neither a physician nor a surgeon was consulted. Soon after the accident in question, symptoms of acute hydrocephalus supervened, and the child died on the seventeenth day of the disease. Of the dissection, as given by Dr. Gölis, the description is closed in the following words: "With this duty, my colleagues, who had taken hydrocephalus as a phantom of my brain, were charged; the results were the same as in case No. 20. After the

examination was over, these gentlemen, at my request, informed the father that the disease had really been the acute hydrocephalus."

22. This was the case of a little girl of two years old. The cause was a severe and neglected dentition combined with a fever designated by Dr. Gölis a mucous fever. At an advanced period of the disease Dr. Letl, a truly skilful physician, made an unfavourable prognosis, which was but too soon fulfilled. This child before the accession of the stage of palsy enjoyed a lucid interval; but she died on the eighteenth day of the disease.

The dissection was performed in the presence of the parents and of four physicians. The bones of the cranium were bluish and separated; and there was effusion in the interval of the sutures. The substance of the brain expanded but little, and was not elastic. The blood-vessels of the membranes appeared more turgid than those of the brain. The fluid effused into the ventricles weighed six ounces. The extravasation of lymph was insignificant. The substance of the brain was softer than is common when death takes place on the eighteenth day of the disease.

The plexus choröides was very pale, and surrounded by a little lymph. The pituitary gland was of natural appearance, but at the basis of the cranium there was found a great quantity of coagulable lymph.

23. This was the case of a child of four years old, who had all the indications of acute hydrocephalus. After having for some time been the subject of strongly predisponent symptoms, he was eventually attacked by those of the acute affection itself. The little patient went through the usual stages of the disease ; and died on the fourteenth day subsequently to the accession of the acute malady. Dissection :— This differed from some of the former dissections in the firmness of the sutures ; the softness of the brain ; the great enlargement of the ventricles ; the extraordinary quantity of the usual fluid ; the slight extravasation of lymph ; and in the pituitary gland being converted into a bladder. The choröid plexus was changed into mucus.

24. This case was an example of the tumultuous variety of hydrocephalus designated by Dr. Gölis the water stroke. Death occurred

after the lapse of ten hours subsequently to the accession of the proper symptoms of the malady. The dissection gave no material differences of results from those of the first nine cases, as already recorded.

25. A case of complication of small-pox with hydrocephalus in a child of four years of age. The case ended in death in fourteen hours after the accession of hydrocephalus. Dissection :—Besides the appearances observed in the first nine cases there was also found between the pia mater and the brain a quantity of fluid which had the appearance of being a mixture of small-pox pus with serum.

26. "Anna Maria Sch," 12 years old, vaccinated, suffered for many years with scald head, for which many powerful remedies were employed with more or less effect. The places under the thick crusts, which discharged and spread, began suddenly to dry up; and the patient felt all the uneasiness of a turgescence in the head. As frequently happens in the first stage of this disease; no assistance was sought for; and in the further progress of it, it was sought too late; the stage of effusion succeeded in

due course, attended by the symptoms which usually indicate that period of the malady. This stage of the disease lasted a long time ; and the sufferer had many very distinct intervals during which she recovered consciousness, speech, and sight. Under suitable palliatives, the symptoms of the last stage slowly approached ; and death did not follow till about the thirtieth day of the malady.]

Dissection :—The external vessels of the cranium, like those of the brain and its membranes, were not very turgid. The colour of the bones of the cranium, the sutures of which were firmly closed, appeared blue; the substance of the brain was very soft ; the ventricles were large, containing much transparent fluid. Lymph was observed in great quantity only on the under surface of the brain and on the basis of the cranium. The pineal gland resembled a bladder.

27. "Anthony P., 7 years old, vaccinated, scrofulous, had suffered a long time with a discharge from behind the right ear of a very offensive smell. As much on account of this local affection as for his general malady, the medicines prescribed were regularly given to him by his mother. After an attack of fever with severe pain

of the side, the discharge from the ear vanished ; but there was soon exhibited, although not with much distinctness, the symptoms of hydrocephalic turgescence. Over the ear which had formerly discharged, and was now violently painful and inflamed, emollient cataplasms were applied ; mild almond oil was dropped into the ear ; and all the remedies proposed for the stage of inflammation were resorted to with punctuality : but they were resorted to in vain. The disease ran through the two last stages, and on the fifth day death followed. The whole of the case has been transcribed verbatim from Dr. Gölis's work, in consequence of the peculiarity and great importance of its contents. The dissection will be found to throw much light on the symptoms.

**Dissection :—**Besides the common appearances, the periosteum of the ear was inflamed, and this inflammation extended to the basis of the cranium into the periosteum of the petrous portion, and was diffused over and around the same. Between the membranes of the brain was found a very great quantity of thin puriform fluid, forming a purulent meningeal dropsy ; and in the cavities of the brain, which

was neither firm nor elastic, were found between four and five ounces of a clear watery looking fluid, tinged with blood."

28. "A. W., six years old, vaccinated, suffered a violent concussion of the brain, which was followed in a few days subsequently by an inclination to sleep, a dulness of the senses, moroseness, great swellings of the parotid glands, accompanied by a considerable pyrexia, attended by several nervous symptoms. After having shown evident signs of a disposition to subside, together with a disappearance of a discharge from the ear, the several stages of hydrocephalus followed each other rather irregularly, and terminated in the death of the little patient on the thirty-sixth day of the disease, reckoning from the commencement of the head affection.

Dissection:—The post mortem examination was performed under very inconvenient circumstances, and after all too imperfectly. The cranium was in its natural state, unchanged as to both its colour and size. Scarcely had the first teeth of the saw penetrated the bone, when there flowed out pus of an intolerable stench. When we had sawed away the upper part of the cra-

nium, we observed that the pus was chiefly collected in the neighbourhood of the petrous portion of the right temporal bone, where also the dura mater, to the size of a small coin, was destroyed. After we had removed the dura mater, we could at no point discover the substance of the brain. All was enveloped in pus, which filled the smallest and deepest convolutions, and appeared to have destroyed the whole of the pia mater. In the neighbourhood of the temporal bone were found many ounces of this puriform offensive fluid, and a still greater quantity had sunk into the under part of the cranium. The medullary substance of the brain was dissolved, and without elasticity. The origin of the several pairs of nerves was surrounded with pus. Lastly, there was found in the ventricles eight or ten ounces of pure water. But on the parietes of the same cavity there was only a small quantity of plastic lymph. The choroid plexus was pale, and nearly in a state of solution. The pituitary gland exhibited nearly a natural appearance."

29. M. S., three years and a-half old, healthy, well-nourished, and strong, after having passed through the measles and small-pox, sustained a

violent agitation of the brain, by falling over a table. This accident became a cause of acute hydrocephalus, which was gradually converted into chronic hydrocephalus, and occasioned the death of its subject in the eleventh year of its miserable life. Both the pathological history and the dissection are given with extreme interest; but as not bearing necessarily on our present subject, it would scarcely be proper to occupy the reader's time with the details of them.

30. Under this head are given two cases of hydrocephalus induced by concussion of the brain. In the event of both cases, the patients got well under circumstances of very active treatment.

31. A child of four years old, healthy and lively, fell from a height of three feet, with his head against a hard board, and wounded himself on the nape of the neck with a piece of a china pot, which in his fall he threw upon the floor. He lost from the wound a considerable quantity of blood. The child, however, soon recovered ; but his good temper and docility changed to a stubbornness bordering on viciousness. The lids of the right eye were always swollen ; the eye itself appearing deeper in the head, and smaller

than the left. His gait was without steadiness, and he was apt to stumble. The digestive functions and the general habits of the patient underwent no change. In the course of the winter months he was attacked with croup, for which the most appropriate medicines were administered by two excellent physicians. The symptoms of croup suddenly ceased, and those of turgescence of the head supervened ; and soon after, those of inflammation of the brain. On the succeeding day the patient died, the subject of a water-stroke.

Dissection :—This post-mortem examination exhibited the traces of violent turgescence and inflammation of the contents of the cranium. Lymph was found in considerable quantity at the base of the skull, whilst there was but little on the corpus callosum, in the ventricles, and other parts, with no watery fluid in the cavities of the brain. Instead of this the right ventricle was seen to contain a quantity of extravasated blood, together with an organised oviform growth, of the size of a pigeon's egg, which weighed two ounces, and appeared to be indurated lymph covered over with blood. The latter had probably its

origin from the fall, and was the cause of the child's change of character.

32. The following was an example of hydrocephalus, of which the cause was a retrocession of premature desquamation of the eruption of scarlet fever. Inasmuch as it furnishes the reader with an example of considerable activity of treatment administered by Dr. Gölis, which was rewarded by a successful issue, I feel it my duty to give it verbatim, and without reduction either of its interest or of its matter. Charles Gerold was attacked in the month of December with scarlet fever. The eruption was mixed with another rash of a miliary character. The progress of the disease was nevertheless mild, regular, and benign; so that on the seventh day from its commencement no fever remained. Not so happily did things go on after the wane of the scarlet fever. No desiccation took place; and on the third day after the termination of the eruption, the left parotid gland began to swell and to grow hard, and the face, hands, and feet to become œdematosus; the appetite lessened with the urine; and stools could only be procured by glysters or purgatives. Diuretics were

taken without effect. Weariness and inactivity increased every hour; and ten days after the scarlet fever was over, there appeared giddiness, confusion of mind, increased sensibility of the eyes, and increment of temperature of the head; nausea, vomiting of every thing which was taken, with aggravation of those symptoms after every movement of the body; bitter complaints of head ache, sense of tension, and shooting pains in the nape of the neck; pains of the stomach, alternating with those of the head; striking changes of countenance; falling in of the abdomen; an unchanged œdema of the hands and feet; constant somnolence; light respiration, but often interrupted by deep sighs; a pulse somewhat slower than was natural to the patient's age; a slight irregularity of the pulse; the skin was dry with partial sweats on the nape of the neck; constipation with little urine; great sensibility of the retina and quickness of hearing were the prominent symptoms which indicated the acute hydrocephalus. My principal attention being determined to the anasarca of scarlatina, I did not immediately remark the hydrophrenitic turgescence of acute hydrocephalus; at length,

however, some of the above symptoms made the fact too evident to be doubted, and such means were immediately used as are usually considered proper for this period. Half a grain of calomel was given every two hours until it produced several green motions, which were attended with colic pains. Emollient medicines, by spoonfuls, were often repeated. By means of leeches behind the ears, four ounces of blood were abstracted; blisters were applied, and the vesicated surfaces were kept in suppuration. The forehead was bathed with cold applications.

As these remedies were not quickly followed by amendment, the pulse did not change, and the distressing pains in the head did not yield; leeches were applied again to the same surfaces, and four ounces more of blood were abstracted. The swelled parotids were covered with a mercurial plaster; because the patient could not bear the use of mercurial frictions. Under this treatment the increased heat of the head ceased, its pains diminished, the vomiting subsided, and the pulse became more febrile. In consequence of these appearances, I made a more favourable prognosis; and Dr. Peter Frank, whose advice

was also taken, approved of my treatment and corroborated my prognosis. The blisters were kept suppurating, and the cold applications to the forehead were continued. To the calomel a quarter of a grain of digitalis in powder was added ; the emollients were continued, and all the signs of the inflammatory stage disappeared, although the calomel was given cautiously and in small doses ; namely, from four to six powders a day, each containing half a grain. There appeared on the tenth day from the commencement of its use, an unwished-for effect on the throat and mouth ; it was consequently omitted ; but the danger of effusion was already past, and the patient was only suffering that debility which was a necessary consequence of the treatment pursued. The digitalis with cream of tartar was continued ; and with the emollients a light infusion of valerian was exhibited, together with a few drops of succinated spirits of hartshorn and syrup of fennel. Under the use of these means, the œdema of the hands and feet, together with the swelling of the parotid, vanished. Light bitters restored the appetite. The patient ultimately recovered his flesh ; and

his powers of mind sustained no diminution from this severe affection of the head.

33. This case furnished an example of the ordinary practice of Dr. Gölis in acute hydrocephalus. Topical bleedings proportioned to the constitution of the patient were resorted to. Blisters were applied to the calves of the legs, and cold applications to the head. Mustard cataplasms were not forgotten. The case happily terminated in recovery. Half a grain of calomel for four days night and morning were exhibited to prevent a relapse. For eight days before going to sleep, a salt foot-bath was used and a suitable regimen was prescribed, which was strictly followed.

34. "G. B., three years and a quarter old, vaccinated, lively, full of talent, but in feeble health, was taken very unwell in the month of December on the second day after an error of diet and exposure to cold; and having three weeks previously sustained a slight agitation of the head, became morose, irritable, complained of languor, shooting pains in the head, tension in the nape of the neck, pains in the abdomen, inclination to vomit, want of appetite and of

thirst. He had passed two days without an action of the bowels. The urine was scanty, the skin was dry, the countenance and complexion were remarkably changeable. The consideration of the previous causes and the presence of several gastric symptoms led the physician to use slight eccoprotics and to order weak lemonade for drink. Low diet and moderate warmth were likewise prescribed. An aperient medicine was exhibited, which had the effect of causing much slime to be evacuated with undigested food, which had an unwholesome smell. The little patient, however, did not find himself relieved. His sleep, during which he moaned, was disturbed and interrupted by frequent whining.

“ The pains and heat of the head, the sensibility of the eyes, and the inclination to vomit were increased ; to which was added giddiness, and momentary confusion on sitting up in bed. The previously febrile pulse became slower than natural, unequal and intermitting ; the breath offensive and the respiration interrupted by sighs. The patient turned continually from one side to the other in bed, had no relief by stool ; but vomited every thing which he took, whether

medicine or food. Turbid urine with the characteristic sediment, and a gradual sinking of the abdomen, were added to the other symptoms. Every question irritated and received peevish answers. There remained no doubt that the above symptoms indicated the malady to be acute hydrocephalus. Leeches were applied behind the ears, and four ounces of blood were drawn. Half a grain of calomel was given every two hours and emollients were exhibited by spoonsful. It deserves to be mentioned that after the blood letting, Spanish flies were applied, and the vesicated parts were kept suppurating till all the symptoms of inflammation had vanished. The case terminated happily."

35. "Anne v. Kreutzer, five years old, after a slight inflammation of the throat, which for many days was followed by a diarrhoea, fell into this fearful disease of the head. Determining my principal attention to the symptoms of the throat affection, I was not sufficiently soon aware of the symptoms indicative of turgescence of the vessels of the head, when suddenly those of the inflammatory period shewed themselves. Leeches, calomel, emollients and blisters were immediately

employed, and with such good effect, that the symptoms of inflammation entirely vanished within three days." This case also ended in recovery.

36. The following narrative is quoted in proof of the occasional existence of hydrophrenitis in the adult. "A. v. R., 35 years old, small and thin, married, became the subject for the first time at the beginning of the year 1806 of a spitting of blood, which was immediately after followed by inflammation of the lungs; after which there remained a chronic cough, which was gradually removed by suitable remedies. Scarcely had the patient considered himself in a way to a perfect cure, when in the month of March 1814, he experienced a new and far more violent attack of cough, attended by a bloody expectoration, without any known cause; and the fair hopes of finding himself happy and healthy in the circle of his relations, were disappointed. Greatly debilitated after these successive illnesses, he went out, in order to strengthen himself in the fresh air of May, and sat down to rest himself on the cold earth in a damp atmosphere and a cutting north wind. This attempt to recover his strength had the worst effects. A violent attack

of fever, with intolerable pains of the head, and sense of burning of the eyes, impatience of light, tension in the nape of the neck, threw the poor fellow immediately after his return home on a sick bed. He and his physician consoled themselves with the assurance that it was only an attack of fever which he had suffered for many springs, and which, added to a jaundice, might soon be expected to pass over. Yet, after the lapse of three days, the febrile pulse became slower than natural, and intermitting; the headache and vomiting became more severe, and these were attended with incoherent talk, and faintings on the slightest movement. In short all the symptoms which indicate the stage of inflammation in acute hydrocephalus, appeared with so much distinctness, that a less practical physician could not easily have overlooked it. This state lasted about seven days; and on the third day from the accession of the last stage of the disease he died."

Dissection:—As the progress of this disease was the same as what it usually presents in children, so the dissection disclosed no peculiarity of appearance. The man had died of a pure and uncomplicated hydrocephalus; hence the vessels

of the membranes of the brain were turgid with blood ; and the ventricles were found charged with eight ounces of the usual transparent fluid. It was only at the basis of the cranium that a small quantity of coagulated lymph presented itself.

37. Herman K., three years old, born of healthy parents, vaccinated, full of life and spirits, was seized in the month of February during a prevalent catarrhal constitution of weather, with symptoms of catarrhal fever, which, by proper regimen and remedies, was entirely subdued within six days. During this gradual convalescence, the mother remarked a striking change in his former good temper, as well as in his whole external appearance. I saw the child for the first time on the third day after the physician of the family had pronounced him free from fever ; and I was able to recognize the well known indications of a far-gone inflammatory period. I immediately had recourse to the most efficacious remedies, and with so good an effect, that the pains in the head and the nape of the neck ceased. The vomiting subsided, and the pulse became regular and much more febrile. The bowels were relieved, and

urine was evacuated in considerable quantity ; the elevated sensibility of the sight and hearing vanished ; the sighing was no longer heard ; the little patient amused himself cheerfully in bed, with his playthings, and ate and drank with good appetite. For three days had this boy found himself well, and during three nights he had slept gently. I was therefore willing to give the happy parents the best hopes ; but my expectations, which under similar circumstances had been so often deceived, made me postpone this prognosis till the fourth day. It was fortunate that I had so determined ; for in the night of the fourth day the patient suddenly became restless and lay sleepless. All the symptoms of effusion, although moderate, manifested themselves. The patient was easily roused out of his insensibility, reached tremblingly after the things which were held up to his notice, swallowed medicines and took drink and broth readily, had an action of the bowels from a glyster, and passed his urine unconsciously. He at length lost his speech, but his pulse remained, as I had never before remarked it in the third stage, namely, febrile, regular, and not intermitting. After four and twenty hours

there appeared some slight symptoms of paralysis, during which the right side was especially affected. Deglutition was impeded. This stage continued for six and thirty hours, when the patient finally expired.

The opening of the body gave the same results as this disease always exhibits, only there was found on the surfaces of the brain very little coagulated lymph, which circumstance had probably depended on the great evacuation of blood, and the free use of blisters which had been resorted to; for by the latter the calves of the legs and the back were excoriated and kept in suppuration till the last stage of the disease.

FURTHER EVIDENCE OF HYDROPHRENITIS BEING  
THE PROXIMATE CAUSE OF ACUTE HYDRO-  
CEPHALUS.

From the above abstracts of numerous dissections supplied by Dr. Gölis of Vienna, it will appear, I presume, pretty fully proved that the proximate cause of acute hydrocephalus is an inflammatory condition of the blood-vessels of the brain and its membranes, in consequence of which a morbid transudation of a transparent fluid, to be

noticed hereafter, together with lymph, and sometimes with other fluids, takes place into the ventricles of the brain, and into whatever other spaces they can find their way into, within the encephalon, even as far as the theca spinalis inclusive. But unfortunately, this pathology has been more of a tacitly admitted principle, which, however, has not been unfrequently denied, than a doctrine of an operative living faith. As the principle of this theory is most important, by reason of its practical tendency, and as the medical practitioners of this country are not much in the habit of consulting foreign professional works even of great merit, I shall now proceed to put the reader in possession, in confirmation of the same theory of the proximate cause of hydrocephalus, of certain valuable dissections published in this country by Dr. Cheyne, a year or two before the date of Dr. Gölis's work. Many of Dr. Cheyne's cases are given with much apparent minuteness and truth; and for the most part they are full of interest. But my principal object at present is to confine myself to a brief review of his post-mortem examinations. This work is entitled "Essays on Hydrocephalus Acutus, or Water in the Brain."

Edit. 2, by J. Cheyne, M.D., F.R.S.E. The pathological histories are entirely omitted, the number of the case being given without reference to any numerical consecution, with the initials of the patient's name and age as follows. The dissection is given at length with a reference to the page of Dr. Cheyne's Essays where it is found recorded.

8. D. C. æt. 8. p. 112. Dissection p. 115. Along the membranes of the surface of the brain, and lining the ventricles, there was rather more venous congestion than usual. There were about four ounces of fluid in the ventricles.

14. p. 129. Dissection, p. 130.—There occurred unusual difficulty in separating the skull-cap from the dura mater. This arose from an indissoluble adhesion, at the upper part of the lambdoidal suture, of a portion of the membrane to the bone. The adhesion was circular, and about an inch in diameter. It was evidently the effect of inflammation, but probably not of a recent date. The dura mater did not, at any other part, exhibit any great mark of disease.

The longitudinal sinus was but scantily filled with blood. On lifting up the dura mater there

appeared on the brain the most incontestable remains of arterial action. All over its surface the florid blood-vessels were very abundant ; and in the spaces between them there were effusions of vermillion coloured extravasation in pretty extensive masses. Under the tunica arachnöidea there was a considerable quantity of serous effusion ; but lodged chiefly in the interstices between the convolutions. The veins were not empty, but they were not by any means turgid. The substance of the brain was of a natural degree of firmness ; and on dividing it numerous red spots of blood studded the cut surfaces.

The ventricles were but little dilated, and contained a quantity of serous effusion not exceeding an ounce. The aperture of communication between the ventricles was somewhat enlarged. The plexus choröides was coloured deeply with arterial blood ; and the velum interpositum was beset with small red blood-vessels in great abundance. It resembled the appearance of the surface of the brain when the dura mater is removed.

The substance of the fornix was perfectly firm. All around the base of the brain, the surface ex-

hibited the same marks of inflammation which were observed on the upper part of it. Yet there was no such appearance on the surface of the cerebellum; on the contrary, there was not to be discerned a single red blood-vessel upon it.

17. p. 137. Dissection :—On the surface of the brain there was no increased vascularity nor effusion. It was remarkably dry; nor was the substance of the brain vascular nor moist. It was firm. The roof of the right ventricle, which was uniformly distended, was elevated considerably above its level. The left ventricle was less distended; but all the ventricles were full of fluid; they contained about three ounces. All round the ventricles the brain was pulpy, without firmness or consistence. There was a very considerable mass of coagulable lymph lying under the optic nerves, which at first looked like a collection of fatty matter. Some fluid escaped upon slitting up the tentorium.

DISSECTIONS COMMENCING AT PAGE 147.

1. Dissection of a boy of six years of age who died of hydrocephalus.—The disease had lasted just twenty-one days; there was rather more pain in the head than usual; in other respects it was

a case presenting a fair example of the disease. The boy before the attack had been apparently in good health. After briefly referring to the state of the abdomen and its contents, the reporter states that the dura mater was found to adhere to the tunica arachnöidea in several places. The veins of the pia mater were full of blood, but not turgid.

On cutting off part of the brain, we found it firm and tough. On the cut surface there were numerous spots of dark, apparently venous, blood. On cutting into the left lateral ventricle, a colourless fluid flowed out, and the ventricle appeared to be considerably dilated; the veins on the walls of the ventricle were filled with blood; the plexus choröides had no redness in its colour; the vena galeni was full of blood; the edges of the fornix were fringed, and the substance of it was peculiarly soft; the other ventricles were in a condition similar to that of the lateral ventricle. The ventricles contained in all about three ounces of blood.

2. p. 149. On removing the skull-cap on the dura mater, there was observed nothing very remarkable on the surface of the brain. The

veins on the pia mater were filled, but not distended; the substance of the brain was firmer than natural. On cutting a pretty thick layer of the superior part of the brain, the lateral ventricles appeared to be much dilated; a fluid by tapping with the fingers could be distinctly felt, and it pushed up the roof of the ventricles; on making a small opening with the point of the knife, water spouted to some distance; the foramen commune, under the fornix, was much enlarged; the substance of the fornix was very soft, being nearly of the consistence of thick cream; the plexus choröides was quite colourless, and there were upon it several little papulous eminences; all the ventricles were much distended; the veins on the walls of the ventricles were full but not turgid; the vessels on the base resembled those on the surface of the brain. The quantity of fluid collected from the brain during the dissection was five ounces.

3. p. 150. When the skull-cap and dura mater were raised from the upper part of the brain, there appeared to be some effusion on the surface, and lodged in the angles between the convolutions of the cerebrum. On puncturing

the membrane on which it lay, the effusion was found to be serous. On the pia mater towards the back part of the head, there were marks of inflammation. On cutting away part of the brain, the surface presented was moist. The substance was of a moderate degree of firmness. On puncturing the lateral ventricle of one side, a quantity of watery fluid, about three ounces, flowed out. The ventricle was enlarged ; and the veins on its sides were conspicuous. The plexus choröides had upon it vesicles filled with serum. When the fornix was raised, there appeared in the middle of the velum interpositum a vesicle of the size of a large pea containing serous fluid. The substance of the fornix was quite soft. The aperture between the ventricles was enlarged ; and both ventricles, which were emptied by the puncture into the one which was first opened appeared to have been equally distended. The third ventricle was enlarged and contained fluid. In examining the base of the brain, the tunica arachnöides round the infundibulum was distended with a fluid of a light green or yellow colour. On puncturing it, a good deal of serous fluid escaped. Besides the fluid, there

was on the pia mater at this place a considerable deposition, apparently of coagulable lymph, which lay in distinct clots. The fourth ventricle was enlarged and contained fluid. The quantity of fluid collected during the dissection was five ounces.

4. p. 152. On raising the skull-cap there appeared to be on the dura mater an increased number of small red blood-vessels. The longitudinal sinuses and veins in the pia mater were filled with blood. There was a considerable quantity of serous effusion over the whole surface of the brain, and marks of increased action in the small arteries, with here and there spots of extravasated blood. Towards the back part and right side of the brain, there was a considerable secretion of coagulable lymph. The substance of the brain was firm. The left lateral ventricle was distended, and on opening it a limpid and colourless fluid to the quantity of three or four ounces escaped. The ventricle was considerably enlarged. The right lateral ventricle corresponded in appearance with the left: the foramen under the fore part of the fornix was much enlarged; allowing the fluid which had been in the right ventricle at once to escape by the opening made in the left. The plexus

choröides was free from blood and colourless. The substance and continuations of the fornix were very white and soft. The third and fourth ventricles were enlarged and contained a fair proportion of fluid. On the cerebellum, under the tentorium there was a deposition of coagulated lymph, but not of great extent. On the base of the brain was an effusion of serous fluid, and, at particular parts, of a thicker opaque lymph similar to what was observed on the upper part.

5. p. 153. The dissection was made about fourteen hours after death by Mr. Hewson, one of the surgeons of the Meath Hospital. The dura mater was healthy. Coagulable lymph in considerable quantity was interposed between the tunica arachnöides and pia mater ; and it was also found on the base of the brain, and particularly about the optic nerves. On the sides of the middle lobe of the left hemisphere, two vesicles like hyatids were observed. The ventricles contained nearly six ounces of blood.

6. p. 154. The scalp was bloodless. The veins of the pia mater were turgid with blood, and the membranes slightly opaque. There was an effusion between the tunica arachnöides

and the pia mater; and there were minute arteries of the surface of the brain florid and injected.

7. p. 155. The scull was very thin. The dura mater was unusually vascular, and the pia mater dry and vascular. There was an effusion under the tunica arachnöides like whey. The substance of the brain was remarkably firm. The pia mater, which passed in between the convolutions of the internal surface of the left hemisphere, was of a bright redness; and there were many white bodies upon it, not unlike glands of the smallest size. The ventricles were uniformly enlarged and contained about four ounces of fluid. The plexus choröides was pale, as well as every part of the ventricles. The part of the brain which forms the ventricles was soft.

8. p. 157. Dissection performed twenty-three hours after death. There was a considerable effusion of turbid fluid between the tunica arachnöides and pia mater; with adhesion between the hemispheres of the brain, increased vascularity of the whole of the medullary substance of the cerebrum, rather more fluid than natural in the late-

ral ventricles : but with regard to this point there was some difference of opinion. There was fluid in the theca vertebrarum.

Appendix, Case 1., p. 160. Dissection :— On raising the dura mater, we were struck with the appearance of the parts presenting. On a superficial view, there appeared to be on the brain a quantity of a green coagulum like jelly in a layer of considerable thickness, in which the veins of the pia mater lay imbedded. These seemed to be coated with a white opaque deposit. What at first appeared like jelly, proved upon examination to be serous exudation between the tunica arachnöides and pia mater : it was in far greater quantity on the upper part of the brain than elsewhere ; and it seemed pretty equally distributed on each hemisphere : it might be compared to a large flat vesication, the margin of which arose from the horizontal line which divides the upper and middle third of the circumference of the brain. Although beyond this part, the appearance of vesication did not extend ; yet the veins on the pia mater all around the external part of the brain were nearly coated with what appeared to be coagulable lymph ; at some places

flakes of it lay in distinct portions. Hence the pia mater seemed as if converted into a thick membrane ; in fact it was thickened, as became apparent on examining that part of it where the exudation on the surface did not exist : and here we found small red vessels and streaks of blood, such as appear on an inflamed membrane. The sinuses in the dura mater, and the veins in the pia mater were filled with blood. The substance of the brain was very soft. On cutting it, fluid transuded so as to moisten the cut surface. There was but little fluid in the ventricles, not exceeding half an ounce. The plexus choröides was nearly colourless, as if bleached. The substance of the fornix, as well as of the other parts of the brain, was very soft. There was little or no fluid in the fourth ventricles. The quantity of fluid collected exceeded three ounces and a half, of which three ounces were collected from the surface of the brain.

Appendix, 2, p. 163. Dissection twelve hours after death :—A thick layer of coagulated puriform matter of a pale green colour between the tunica arachnöides and pia mater, particularly on the anterior and middle lobes of the

cerebrum. The hemispheres were agglutinated together for about two thirds of their extent, down even to the corpus callosum. The medullary substance of the brain was more than usually vascular. The ventricles were distended, and contained two ounces of fluid. The choroid plexus was bloodless, and the foramen commune anterius was enlarged. The iter ad tertium ventriculum was capable of receiving a large goose quill. The third ventricle was distended and full of water. There was a considerable effusion of coagulable lymph between the laminæ of the velum interpositum. The pineal gland was softened in its structure, and surrounded with an effusion of puriform matter. The fourth ventricle was greatly enlarged and distended with fluid. The pia mater investing the cerebellum was sound. There was a great quantity of fluid in the theca vertebrarum, and some purulent matter on the sella turcica and pituitary gland.

Appendix C. 3., p. 167. Dissection by Mr. Crampton. Profuse flow of blood on dividing the scalp. Very firm connexion between the dura mater and the bone. The veins on the surface of the brain turgid. A considerable

quantity of fluid between the tunica arachnöides and pia mater. The tunica arachnöides thickened. Upon puncturing the tunica arachnöides, several drachms of fluid escaping, showed that the gelatinous appearance of the surface of the brain was chiefly owing to serum under that membrane. The appearance of the substance of the brain was natural ; there was about an ounce of fluid in the ventricles. The velum interpositum was turgid with blood.

I shall here close the evidence in proof of the inflammatory nature of acute hydrocephalus. The numerous forms of inflammatory results exhibited in the foregoing dissections will, I apprehend, be accepted by all candid and practical men as finally decisive of the truth of the first proposition propounded in this little work ; namely, that acute hydrocephalus is an inflammatory disease. The second proposition has for its object to prove that acute hydrocephalus is curable, equally, and by the same means, with other diseases of inflammation. It is the truth of this proposition that we have now to proceed to demonstrate.

## OF THE TREATMENT OF ACUTE HYDROCEPHALUS.

The greater number of acute diseases are inflammations; and the greater number of inflammations are curable by the abstraction of blood, either locally or generally; the quantities being proportioned to the period and violence of the disease. I am not aware that any disease of active inflammation, of whatever tissue, which might not require, or which at all events might not be benefited by the abstraction of blood, provided such a measure be opportunely resorted to. Entertaining no doubt of the highly inflammatory character of acute hydrocephalus I feel it my duty to place this great measure, the abstraction of an adequate quantity of blood from the tissues morbidly inflamed or congested, at the head of my system of treatment.

ABSTRACTION OF BLOOD THE FIRST MEASURE  
TO BE ADOPTED IN THE TREATMENT OF ACUTE  
HYDROCEPHALUS.

Acute hydrocephalus really means a recent disease, having inflammatory action as a part of its character; and not indeed as a part only, but as constituting the very essence of its character. I

may observe that the name of the malady which I have taken up for practical elucidation expresses only the result of the disease itself, the mere effusion of a watery fluid into the head. This name was furnished during the prevalence of the old theory; which taught that the fluid found in hydrocephalic heads was a simple effect of filtration, by reason of great debility and relaxation of the parts interested; without taking into the account any morbific action of inflamed or over-congested vascular tissues, which might be supposed to operate as the proximate cause of the malady. To express the simple fact of an effusion, thus accounted for, of a watery fluid into the head, the name of hydrocephalus was sufficiently well adapted and appropriate: but to furnish an adequate expression, both of the result and of the proximate nature of the disease, the compound hydrophrenitis would furnish a much happier, as well as a more correct designation of it.

This name, had it occurred to one of our earlier nosological nomenclators, might have led many a thinking medical practitioner to much more active practice than has been usually resorted to in the treatment of acute hydrocephalus.

But precisely correct names are not likely to be applied to objects of mind, before the things which they are intended to represent are distinctly understood. How did it happen that Dr. Charles Quin's mind *did not in a moment* see the proper application of his father's original conception, that acute hydrocephalus was a disease of inflammation. There can be no doubt that his mind must have been preoccupied by some previous, perhaps by long established notions of practice, unfriendly to a full and unbounded adoption of the new theory. But previous notions unfounded on principles, or founded on false or unknown principles, should be considered only as so many prejudices. The prejudices which resulted from what he knew before, or from what he fancied he knew, exerted so powerful an influence over his habits of practice, that the legitimate and counter influence of his father's doctrine was all but suppressed in his application of it to the treatment of acute hydrocephalus.

I have already hinted that the new doctrine was suggested at a period most unfavourable to its universal adoption and rapid propagation. But independent of the prevalence of Brunonianism,

it was moreover a strong prejudice of the time in question that young people, and especially children, could not be considered proper subjects of active general bleeding; nor even of topical bleeding on any scale of adequate efficiency. I may advert to this notion as a prejudice of no inconsiderable magnitude in the present day: and in reference especially to the treatment of acute hydrocephalus, it has exerted a baneful influence on the convictions and practical habits of the physicians of this country during the greater part of my professional life.

It would startle my reader were I to make the statement that the theory of bleeding in acute diseases, and especially in the acute diseases of children, is very imperfectly known, even at the present day, among the physicians of this country. Such a proposition, however, it will become my duty in the sequel to prove, although it may seem ungracious even to announce it.

It accords with our universal experience that whenever it becomes our duty to recommend the abstraction of blood from infants or very young children in a way to ensure the efficiency of the operation, the proposition is sure to be

received with coolness in the first instance, if not eventually with repulsion or positive non-compliance.

Hence no doubt the fact that even the idea of an ample abstraction of blood as a remedy for acute hydrocephalus was only doubtfully and feebly entertained by Dr. Charles Quin himself; however distinctly he thought it his duty to announce it in his new theory of the disease as published in 1779: hence the innumerable cases which we find recorded of acute hydrocephalus in the writings of the Fothergills, the Watsons, the Percivals, the Haygarths, and the Witherings of the last century, in the management of which not a word is said about bleeding excepting by means of leeches applied to the temples or some other part: hence, in the present century, the opinions of Dr. Carmichael Smyth and his contemporaries, in strong objection to the same practice; and hence, finally, the large amount of loss of life which has been sustained by the population of this country, including Scotland and Ireland, for want of correct professional knowledge of the treatment to be adopted for the cure of acute hydrocephalus from the period of Dr. Carmichael Smyth to the present time.

The only contemporary of Dr. Charles Quin who thoroughly understood his father's doctrine, for I am more disposed to call it his father's doctrine than his own, was Dr. Rush of Philadelphia.

If we peruse a few passages of that gentleman's paper on the subject of this essay, which he published intermediately between the dates of Dr. Charles Quin's publications, we shall see that he did understand it; and that he really was not a dilettanti, milk and water physician, as it was then too much the fashion and too much the practice of English physicians to aim at.

We are informed by Dr. Rush himself that his mind was much predisposed to entertain the new theory of the Quins before its publication actually reached him. "Having for many years," he observes, "been unsuccessful in all the cases of internal dropsy of the brain which came under my care, I began to entertain doubts of the common theory of this disorder, and to suspect that, instead of being considered as an ideopathic dropsy, the effusion of water should be considered only as an effect of a primary inflammation, or congestion of blood in the brain. I mentioned this opinion to my colleague, Dr.

Wistar, in the month of June 1788, and taught it in the winter following in my lectures. The year after I was confirmed in it by hearing that the same idea had occurred to Dr. Quin. I have since read Dr. Quin's Treatise on Dropsy of the Brain with great pleasure, and consider it as the first dawn of light which has been shed on the theory of this disorder. In pursuing this subject, therefore, I shall avail myself of Dr. Quin's discovery; and endeavour to arrange the facts and observations I have collected in such a manner as to form a connected theory of them, which I hope will lead to a new and more successful mode of treating this disease."

The following are abstracts of cases in which Dr. Rush prescribed bleeding in acute hydrocephalus. "The first case was that of a young lady of four years of age. I found upon inquiry that she had received a hurt on her head by a fall. I advised the loss of five ounces of blood, which gave her some relief. The blood was sизy. The next day she took a dose of calomel and jalap, which operated twelve times. On the eighteenth day she lost four ounces more of blood, which was more sизy than that drawn on the

fifteenth. From this time she mended rapidly.  
Recovery."

2. "On the twenty-fourth of the same month, I was called to visit J. C., aged four years, who had been hurt about a month before by a wound on his forehead by a brickbat, the mark of which still appeared. He had been ill for nearly two weeks with coma, headache, colic, vomiting, and frequent startings in his sleep. The symptoms plainly indicated an internal dropsy of the brain. I ordered him to lose four or five ounces of blood. Three ounces were only drawn. On the twenty-fifth he lost five ounces of blood again. On the twenty-seventh the vomiting was troublesome, and his pulse was still full and tense, but irregular, and I ordered him to lose four ounces of blood. On the fourth of December he was ordered to lose five ounces of blood, and on the twenty-ninth six ounces of blood. Perfect recovery."

"Cases 3 and 4 were attended in March 1792. The patients were two young ladies, each of three years of age. They were each bled to four ounces, and they both recovered."

5. "In the months of July and August 1792, I attended a female slave of a lady from one of the

West-India islands, who had an obstinate headache, coma, vomiting, and a tense, full, and slow pulse. I believed it to be a case of internal dropsy of the brain in its inflammatory stage. I bled her five times in the course of two months, and each time with obvious relief of all the symptoms of the disorder. Finding that her headache and a disposition to vomit continued after the tension of her pulse was nearly reduced, I gave her as much calomel as excited a gentle salivation, which in a few weeks completed her cure."

"6. The daughter of R. M., aged eight years, in consequence of the suppression of a habitual discharge from sores on her head, in the month of April 1793, was affected by violent headache, puking, great pain and weakness of her limbs, and a full, tense, and slow pulse. I believed these symptoms to have been produced by an inflammation of the brain. I ordered her to lose six or seven ounces of blood, and gave her two purges of jalap and calomel, which operated very plentifully. I afterwards applied a blister to her neck. In one week from the time of my first visit to her she appeared to be in perfect health.

"7. A young woman of eighteen years of age,

a hired servant in the family of Mrs. E. S., had been subject to a headache every spring for several years. The unusually warm days which occurred in the beginning of April 1793, produced a return of this periodical pain. On the eighth of the month it was so severe as to confine her to her bed. I was called to visit her on the 9th. I found her comatose, and when awake delirious. Her pupil was unusually dilated, and insensible to the light. She was constantly sick at her stomach, and vomited frequently. Her bowels were obstinately costive, and her pulse was full, tense, and so slow as seldom to exceed from 56 to 60 strokes in a minute for several days together. I ordered her to lose ten ounces of blood every day for three days successively, and gave her on each of those days strong doses of jalap and aloes. The last blood which was drawn from her was sизy. The purges procured from three to ten discharges every day from her bowels. On the twelfth she appeared to be much better. Her pulse was less tense, and beat 80 strokes in a minute. On the 14th she had a fainting fit. On the 15th she sat up and called for food. The pupils of her eyes now recovered

their sensibility to light as well as their natural size. Her headache left her ; and on the seventeenth she appeared to be in good health. I am the more disposed to pronounce the cases which have been above described to have been internal dropsy of the brain, from my not having been deceived in a single case in which I have examined the brains of patients whom I have suspected to have died of it."

"I believe, with Dr. Quin, that this disorder is much more frequent than is commonly supposed. I can recollect many cases of anomalous fever and headache in children which have excited the most distressing apprehensions of an approaching internal dropsy of the brain ; but which have yielded in a few days to bleeding or to purges and blisters."

On perusal of the above cases we see the facts demonstrated that Dr. Rush, as far as concerned himself, was a founder of the new theory of acute hydrocephalus ; that he had taught it to his pupils before he had heard of its publication by Dr. Charles Quin ; and that, very differently from that gentleman, he had himself vigorously practised what he taught. From what

he has written on this subject as well as on many other pyrexial diseases, it is quite obvious to inference that he had arrived at a clear conception of the spirit and essence of his newly-adopted theory. For in every case of the supposed malady, he directs repeated general bleedings as his first great measure of treatment. We have, indeed, no evidence that he ever arrived at a complete mastery over the power which he wielded ; and we have, moreover, several proofs afforded us in the above details that ever and anon he wielded it undexterously, if not unfortunately, for the interests of his patients. He himself acknowledges, and he could well afford to make the acknowledgment, (see the volume already quoted, p. 224,) that he had failed in five cases in which he had used the remedy of blood-letting in the inflammatory stage of acute hydrocephalus. But let it be considered that, at the period when he both wrote and taught, he was but a youthful citizen of young America, too remote in his position to derive much advantage from the sanctions and influences of the long-established medical institutions of Europe.

OF THE THEORY OF BLOOD-LETTING AS A REMEDY  
IN ACUTE HYDROCEPHALUS.

The theory of blood-letting in acute diseases is indeed a doctrine of no trifling extent and variety of application. In the application of the practice of this great measure to the subject before us, I have now to consider the time most proper for the abstraction of blood as a remedy for acute hydrocephalus; the quantity or quantities of blood to be abstracted; and the methods or instruments by which we have to ensure the attainment of that object.

My first purpose is to indicate the time when a subject of acute hydrocephalus ought to have the unduly excited and congested blood-vessels of his head relieved by a direct abstraction of blood from the circulating mass.

That time, in my opinion, should be the first possible opportunity that could be made available under the particular circumstances of the case subsequently to the final and confident decision of the medical attendant or attendants as to the nature of the disease. It is well known that the inflammatory stage of acute hydrocepha-

Ius is frequently anticipated for some days ; and in many cases preceded by a long train of premonitory or predisponent symptoms.

It might be asked whether it would be proper or not to have recourse to so formidable an operation as the abstraction of blood must be considered, as a measure chiefly of a prophylactic nature, and before the fullest establishment of the malady. I would answer, that during the pyrexia attendant upon the accession of an active fever, although its peculiar character might not be yet established, it could never be improper, but on the other hand a positive advantage, to have recourse to an abstraction of blood, upon a competent scale, to effect a subduction of the pyrexial actions of the arterial system. There is usually attendant upon cases of strong predisposition to this disease an assemblage of symptoms which will be readily recognised by an experienced physician, and which, when presented to the calm consideration of parents and other attendants, ought to excite the alarm of all parties interested in the results of such cases. All that could be required to justify the decision of advising the abstraction of blood under

the supposed circumstances, would be a state of pyrexia as already assumed; and whether it might prove in the further progress of its development a case of small pox, measles, acute hydrocephalus, or of any other fever whatever, the operation of a timely abstraction of blood would be a measure of unquestionable advantage in the calculation of its proving a disease of any pyrexial importance.

In the event of the case being one truly, and without doubt, of genuine hydrocephalic fever, it would be impossible to avail oneself of too early an opportunity to lay it prostrate before the most active powers of the healing art. Of these powers, I have already stated that free and early bleeding should be considered incomparably of the first importance. The case might very probably require this great measure to be followed up by other items of treatment of indispensable importance; but bleeding, on a proper scale, would, at all events, prove, if not the *one thing*, *most certainly the first thing* *needful*. On the accession of any pyrexial ailment in a family, there would probably present themselves to the attention of some of its indivi-

dual members of it certain circumstances not a little calculated to occasion some anxiety, or possibly some good grounds for alarm.

It should be made a matter of universal information among parents, that acute hydrocephalus is a disease of no unfrequent occurrence ; and that the earlier it came within the cognizance of the medical attendant, provided he might be competent to discover its diagnosis and to superintend its treatment, the greater the probability or certainty, other things being equal, of the patient's recovery. The indications of the period of formation of the disease, which for practical purposes I have called the stage of turgescence, have been already partially detailed. In order to place parents in a just position relatively to the alarming character of the malady, even during its incipient stages, I shall again, under other forms of practical advertence to the same circumstances, remind them of their paramount duty to be accessible to all sorts of information which might lead to an early discovery of the fact and diagnosis of a disease so formidable, and unhappily so fatal, as acute hydrocephalus. The question here is not, whether the

operation of blood-letting, in some form or other, is or is not to be had recourse to as a measure of treatment. I can well suppose cases in which it might prove of no use, and in the management of which it might not answer the end of a useful policy in the physician to propose blood-letting. I may probably advert to cases of that kind in a future page.

My present object is especially to call the attention of my reader to the quantity of blood to be abstracted in the event of such a measure being determined upon. I know but of one useful, safe, and satisfactory test; and that I beg to propose to the consideration of my reader, as the result of an anxious, cautious, and most extensive experience, during a period at least of about ten years. It is to carry the first bleeding, provided the opportunity is given to prescribe it at the onset of the disease, to full fainting. It is not a state of faintishness that is wanted: it is full and decided fainting. It is that state of enfeebled and reduced circulation, which, together with an occasional suspension of consciousness is called deliquium animi. It is accompanied by an absence of all colour in the lips,

and also in a great measure by a correspondin change of complexion of the whole countenance. The entire surface of the body, and especially of the forehead is suffused, during this condition of the circulation, with an excessive abundance of cold moisture.

Such, I believe, in every case is the condition of the circulation during genuine fainting; and it is to the attainment of that point of reduction of arterial excitement, at least for a time, that I would recommend the abstraction of blood to be carried at the commencement of acute hydrocephalus.

The first general bleeding having been carried to the extent here supposed, it will rarely happen that any further considerable depletion of the same kind will be required; inasmuch as one good bleeding adopted at the very commencement of an acute disease, will almost always ensure the attainment of what can be fairly hoped for from so decided a measure; at least it will ensure a positive suspension of the progressiveness of the malady; and it will also in a great proportion of cases be followed up by the accession of a train of improved conditions, which we

shall have no difficulty in recognising as those of a most promising convalescence. I beg to observe that one good bleeding carried to fainting is a much safer practice, as well as more economical of the patient's strength to bear this form of depletion, than several successive smaller bleedings at intervals of days, or even of many hours' duration. The reader will perceive that I here refer to certain results of bleedings which can only with propriety apply to what we usually call general bleeding. To produce the best effects of general bleeding it requires that the blood to be obtained should be abstracted in a short time, and in a full stream. This remark leads necessarily to a consideration of the patient's age and other circumstances.

At five years of age and upwards, fainting may be easily induced by dexterous management of the operation of ordinary venesection, by the usual incision of the median vein. At an earlier age it would be more convenient, with a view of securing all the benefits of the operation, to obtain the required quantity of blood, by cupping, from behind the ears.

The great advantage of this method of ab-

stracting blood from the circulation of young children, is, that it enables us to obtain the quantity required very gradually; and that the small oozing stream can be stopped in a moment at the pleasure of the medical attendant; without exposing the bleeding surface, as sometimes happens when leeches are employed, especially under circumstances of undexterous management, to an excessive loss of blood. It moreover ensures the abstraction of as much blood as may be wanted in a short time, which it must be obvious is an object of extreme importance to the successful treatment of a disease so rapid in its first advances, and often so obstinately determined in its progress, as are many cases of acute hydrocephalus.

It is moreover a superiority of cupping over leeches of incalculable advantage, that we can measure by that method the quantity of blood required to be obtained even to the weight of half an ounce or less.

In determining the quantity of blood to be abstracted in a given case, we must of course be governed by the age, constitutional strength, and previous state of health of the patient.

The quantity to be taken from a child of one year old will amount to four or five ounces. If the operation be not performed till the second day of the stupor, and if the heat of the head be already considerably raised above the natural temperature of health, the required quantity will possibly exceed the measure here stated by, perhaps, half an ounce or an ounce. A little patient in my private practice was seized about a year ago with violent inflammation and intumescence of the side of the face and neck. He was a month old ; but not more. This infant was living exclusively on the mother's breast, and was a thriving child for its age. I directed it to be cupped behind the ear of the affected side to three ounces and a half. It was convenient to me to be present when the copper was expected to arrive ; and the quantity drawn amounted to full four ounces ; when the little patient fainted. The inflammation was speedily subdued ; and the child's strength was not perceptibly injured by the operation. I mention this case, not because it was suspected to have been one of acute hydrocephalus ; but simply to prove the very considerable quantity of blood, which, in cases

indicating such an operation, may be safely abstracted from very young children.

From this early age forward to one year old, the quantity of blood to be abstracted should be from three to five ounces, according to the age and vigour of the child, according to the amount of heat of its head, and the degree of phlogosis already present. In cases of two years old, with an oppressed circulation of the head from teething, or from any other febrile cause, my quantity is seldom less than six ounces, and never less than five and a half.

In cases of between three and five years old, I usually prescribe the abstraction of between five and ten ounces of blood. At these ages, the best rule is to order bleeding to full fainting.

I never mean simply the disposition to faint, which the word faintishness, or the expression of being faint, sufficiently well expresses, when I use the term fainting. That would leave too much to the misconstruction of the copper, or of the little patient's friends.

Children between six and ten years old will require an abstraction of blood to an amount seldom less than from ten to eighteen ounces of

blood, according to their sexes, habits, states of the constitution, amount and character of the existing fever, and other circumstances of presumed ability to sustain and to require the operation. Something of course must be left to the discretion of an experienced and competent physician.

Great boys seldom become the subjects of acute hydrocephalus, and young ladies much more frequently than adolescents of the other sex.

For all ages of advanced childhood and girlhood, venesection ad deliquium animi, will invariably furnish a safe rule, provided it be carried fairly and honestly to the full extent of the proper meaning of the expression.

A circumstance of great importance already lightly adverted to will require the practitioner's most attentive consideration. It is the stage and state of development of the disease at the time. If we suppose the malady to be so far developed as to have already produced much increment of heat of the head: such a case, other things being equal, would require the abstraction of a larger quantity of blood than might

be necessary during the first attack, the first chill or cold stage of the accompanying fever. In a small proportion of cases, and especially in such as may have been neglected in the first instance, or for the relief of which the quantity of blood taken by the first operation may have been insufficient to produce the required results, it may become necessary to repeat the cupping once again.

The first cupping, however, in every case, ought to be made on a sufficient scale to obviate the necessity, at all events, of more than once repeating the operation. One good bleeding, it should be remembered, produces a much better effect as to its competency to reduce arterial action than two or three inconsiderable operations of the same kind. By an ample bleeding I do not mean an unnecessarily profuse shedding of blood ; but a fairly sufficient bleeding. An actually sufficient bleeding, it should be observed, might prove a measure of actual economy in the decision of this important point of practice. Repeated venesecti ons, or of bleedings of any other description, on successive days, is a practice now pretty well exploded in this country, and, in fact, it should never have been a practice at all in any country.

It would be a hardship upon an infant of a year old, for example, to have to lose three ounces of blood by cupping, and again, in consequence of want of sufficient knowledge, or else of decision on the part of its medical attendant, or possibly by reason of indexterity of the copper, to have to lose three or four ounces more on another day; whereas four or five ounces taken at once, and in the first instance, might have abundantly sufficed to subdue, and finally to cure the malady.

I beg therefore to repeat that one sufficient bleeding at the commencement of an active inflammatory malady is an incomparably safer practice, than repetitions of smaller bleedings at successive and distant intervals. Unless, indeed, delayed too long, the former method is always a comparatively safe practice; whereas the latter, from many and various causes, is chargeable with much uncertainty as to its final results.

I have already more than once recommended the abstraction of blood as the first measure which I consider indicated in the treatment of acute hydrocephalus: but even this great measure—this supreme power of our art in the

treatment of the malady in question, may not suffice to give us full assurance of success : for we have the experience of every day to convince us, and perhaps more frequently than in the case of any other remedy whatever, that it is resorted to too late ; and if too late by a single hour, even that hour, being of the nature of time itself, may not admit of being recalled.

I have hitherto directed my principal attention to one mode of abstraction of blood ; that by cupping. This method of taking blood from young children is so satisfactory, for many reasons, that I much regret that the practice of cupping is not more general in every province of Great Britain and Ireland than it really is in many of our larger cities and towns.

It would not a little surprise my readers were I to state the number of actually good cuppers, in the midst of scores if not of hundreds of pretenders, resident in this great metropolis. The number, at all events, is much smaller than is generally supposed ; whereas there are many very considerable towns in the country which cannot boast of the residence of even one professed cupper. The duty is not unfrequently undertaken by

general practitioners: but it is seldom well performed excepting by persons who exclusively devote themselves to that business by profession. The operation here recommended presumes upon its performance being in many cases, at all events, attainable in London.

For the country I would recommend the union and good feeling of all classes of medical men in a district, to accept and to act upon some such suggestion as the following. It is, that they would endeavour to select an individual of their own body, and give him their united sanction and encouragement to become a copper for himself and all the rest of his brethren who might be disposed to promote his interest, residing within the extent of a population which might be considered a sufficient number of inhabitants to keep a professed copper in tolerably good employment. In a town of fifteen or twenty thousand inhabitants as a minimum, with the good feeling of the profession in his favour, (but, alas, that is the great difficulty), I fancy there might be furnished a moderate sufficiency of business for one dexterous copper.

I profess not to be precise in my suggested proportions, nor rigid in my expectation of

universal compliance with the principle of the suggestion itself. All calculations of this description in a great country like England must be indefinite and dependent upon endless diversities of condition and circumstances of the inhabitants of the different districts of the kingdom.

I should not be a little gratified to hear of a skilful copper being appointed for every population of forty or even of fifty thousand inhabitants. But I must leave this suggestion with the leading members of my profession ; I feel I have no right to urge it on their consideration beyond its fair claims to their attention, on the ground of its reasonableness and promise of great professional utility.

But I may be asked, in the event of my proposed arrangement for the location of professed cuppers in our principal provincial cities and towns not being eagerly embraced, and tolerably generally adopted ; I may be asked what other method I might be disposed to recommend, as the best substitute for cupping in cases requiring abstraction of blood from children under four or five years of age ? The question is very easily answered, provided the individual entrusted with the professional management of such a case possessed the

required knowledge and adroitness to undertake the duty to be recommended, which is that of bleeding by incision of the jugular vein.

In general practice I have found the younger part of our profession somewhat indisposed to perform this very simple operation. This indisposition has no doubt arisen from not having been taught to practice it under the eye and with the assistance of their senior and superior, during their apprenticeship. Some years ago when I practiced more extensively among the poor than I do at present, I was not entirely unaccustomed to perform this operation myself.

On other occasions, and since the period in question, when I have met with a little aversion from the duty, in the case, for example, of a young professional friend who had never before opened the jugular, I have from time to time felt it my duty to offer to relieve him of its anticipated responsibility. The precautions which require to be attended to in the due performance of the operation of taking blood from the jugular, are to have the child's neck well secured in a position easily accessible to the point of the lancet; to use a narrow pointed lancet which shall

not necessarily make a larger wound in the integument than shall be convenient; and to be quick to know how, and to be provided with the means of instantly stopping the bleeding current upon having received into the tea-cup, or other proper vessel, the prescribed quantity of blood.

It is seldom that the temporal artery of an infant will bleed practically well enough for the purpose here required, although it might be sufficiently well incised. I therefore do not feel myself at liberty to recommend the attempt of obtaining blood by this method from infants of a tender age.

From the objections which, I fear, will always, at least for many years, be felt against opening the jugular vein as a measure of general practice; I find myself under the necessity of once more urging the proposition already submitted to the reader in favour of cupping.

In the present state of great inefficiency of that art, I know of no better method of obtaining blood from the general circulation of very young children than the very unsatisfactory one of having recourse to the application of leeches. The principal objection to the employment of leeches in the cases here supposed, is their prac-

tical inadequacy to ensure the abstraction of a sufficient quantity of blood in a moderately short time. Unless that is done, the object of permanently subduing arterial action is not easily, nor always really effected by means of leeches. The action of these operators is so uncertain, and dependent upon circumstances not easily controlled, that it is not always easy to give very precise instructions as to the number of leeches which should be prescribed in a given case. This, in my opinion, is the weak part of Dr. Gölis's work. He appears to have an entire comprehension of the principle which ought to guide his practice in the medical management of acute hydrocephalus ; for in the treatment of one of his own cases he speaks of the expediency of an *overwhelming* abstraction of blood.

But for want of the practice of taking blood freely, and in ample quantity, by cupping ; an opportunity which I apprehend does not exist on the same scale of convenience and effectiveness at Vienna as it does in London, Gölis has not been able, as it appears to me, to carry the principles of his theory into full effect in practice : otherwise I do not immediately see how he could

have obtained the materials for charging his volume with so many fatal cases. It may perhaps be offered in explanation, that his treatise may contain the reports of that learned physician's practice for a long series of years; and that the number of fatal cases reported in his book, although considerable, may furnish no unreasonable proportion yearly for a long period of time.

The institute for sick children, if I mistake not, was opened at Vienna, in the year 1792, and Dr. Gölis was appointed the first, or one of its first physicians. The explanation here suggested therefore has much force of probability in its favour; and I am quite willing to give it its fullest value.

I am nevertheless of opinion that many of the younger children's cases which we find reported in Dr. Gölis's volume, might have ended more fortunately had the abstraction of blood by cupping been resorted to, instead of the very tedious and uncertain method of obtaining it by leeches. For this reason, I cannot help concluding and lamenting that this constitutes the most defective part of a work for

which, by reason of its numerous excellencies, I entertain the greatest respect. It is however much to be regretted that Dr. Gölis has not dated his very important pathological histories, which might have enabled his readers to arrive at least at some probably correct opinion of the success of his practice.

OF THE USE OF EMETICS IN THE TREATMENT  
OF ACUTE HYDROCEPHALUS.

Having secured as much control over the morbid arterial excitement of an incipient case of acute hydrocephalus as one sufficient abstraction of blood can be expected to give, the first important measure to be adopted immediately afterwards, with the view of maintaining, or even of extending our control over the actions of the heart and arteries, should be to exhibit to the little patient, as soon as possible after his recovery from the fainting consequent upon the loss of blood, an active emetic. For a child of six months old, the proper dose should be a fourth, or a fifth of a grain of tartarized antimony, and about five grains of powdered ipecacuanha. This form and quality of an emetic will rarely disappoint the expectations of the practitioner; whereas the pleasant draughts and mixtures

made with the diluted wines of tartarised antimony and ipecacuanha, usually prescribed as emetics for young children, are occasionally chargeable with that result. Whilst on this subject, it may not be improper to caution parents against placing any confidence in certain alarming and otherwise uncalled for observations of druggist's apprentices, and other young gentlemen occupied in shops of pharmacy, about the magnitude of doses of medicines intended for young children. The dose of the emetic powder, under the circumstances which I have now supposed, is the proper measure to be prescribed as an emetic for a child of six months old; and it may be exhibited with the utmost safety. It will no doubt make the infant very sick. But this sickness will have in no small degree the effect of subduing, and of keeping permanently subdued, the over excitement of the heart and arteries; of which the natural tendencies under the influence of the intractable disease which I have now to discuss, is gradually to return to their antecedent condition, both of rhythm and power; notwithstanding that in many cases the previous abstraction of blood may have been

very considerable. It is therefore neither convenient nor safe to omit the emetic: and if it should produce an amount of sickness which may harass the little patient for some hours, the greater probability of its sufficient operation, the greater safety which may be reasonably anticipated from its exhibition; the greater, moreover, will progressively prove the reduction of the more alarming symptoms, and the more quickly attained will be our eventual triumph over the malady with which we have to contend.

To ensure the emetic action of medicines of this class, the patient should be made, if necessary by force, to swallow aqueous fluids at short intervals of time after their exhibition. In the management of the greater number of children at the breast, the force here recommended will be found unnecessary, inasmuch as most children of such an age, if possessed of their consciousness, will usually take their natural aliment, their mother's milk, with sufficient readiness. If the consciousness is partly lost, by reason of stupor, they will nevertheless in most cases retain a sufficiency of it to enable them to swallow fluids upon the application of such

fluids to the tongue and anterior fauces by means of dessert spoons or feeding boats.

But the actual rejection of the contents of the stomach should not be considered, in all cases, without exception, an uniform consequence of having administered the emetic powder just recommended. We meet with a certain proportion of patients of all ages, whose stomachs cannot be readily excited by the action of emetic medicines; although the subject of such treatment might nevertheless be made to sustain no little inconvenience—perhaps even more inconvenience—from the attendant sickness, than if the emetic action had been excited; and I am not certain that its sedative effects on the sanguiferous system is not quite equal, in many cases, if not greater than when the proper action of an emetic is produced. About fifty years ago, and subsequently, I have been told, it was no uncommon practice with a certain class of active practitioners of that period, to prescribe what they called dry emetics, for the purpose of diminishing arterial action by the production of nausea; and to repeat from time to time small doses of the remedy, to keep up for an indefinite number of hours, its depressing influence

upon the actions of the heart and arteries. I mention this fact simply in the way of illustration ; for I confess that I prefer the action of a full emetic, even were it necessary to repeat it after the lapse of an hour or two ; than to expose a young infant to the thrice cruel sufferings incident to the continued action of dry emetics for twelve or twenty hours together. The emetic is to be exhibited as soon after the abstraction of blood as the child shall have subsequently pretty well recovered from its fainting. From this view of the subject, it will, I think, clearly appear that the intention of the emetic is not simply, nor even principally, to cause an ejection of the contents of the stomach ; but to reduce the excitement of the heart and arteries, and to keep repressed the tone and rhythm of the arterial system. I wish my reader distinctly to understand the principle of this indication, whether practitioner or parent ; for in that case the former will generally recognize with more satisfaction, and the latter will concur more confidently in the measures proposed, and be able to secure better attention from the nurses and servants to the minutiae of the very important services not unfrequently devolving upon them.

REDUCTION OF THE TEMPERATURE OF THE HEAD  
A MEASURE OF GREAT IMPORTANCE IN THE  
TREATMENT OF ACUTE HYDROCEPHALUS.

Due attention having been paid to at least two principal indications, I now proceed to recommend a third measure of treatment of scarcely less value than either of the others : it is, to effect a speedy reduction of the morbid temperature of the head. The proximate cause of the disease, it has been sufficiently demonstrated, is an intense inflammation of the vascular tissues of the brain. Where there is inflammation, there is always an inordinate development of heat in the part inflamed.

During an incipient stage of acute hydrocephalus—that is, during the first development of the formative period of the disease—there is, what may be appropriately enough called a stage of rigor of the invading fever; which is sure to be followed by an increased determination of blood to the head, and consequently by a state of turgescence of its blood vessels. This stage of congestion, indicated by an intense accompanying headache, is sometimes all but finally established before the rigor or chills of the extremities shall

have ceased to be felt, and more or less distinctly expressed. Even then, when the infant shall appear pale, spiritless, and shrunk, as to the general expression of its countenance, there is often an easily ascertainable excess of temperature of the head. From this time forward the heat of the head rapidly accumulates until the disease shall have arrived at its destined fulness of consummation. The forehead is, perhaps, the part of the head most frequently raised in temperature during the earlier period of the stage of turgescence; but I am not quite sure that the occiput is not almost as frequently the subject of this early phlogosis as the forehead, or any other part of the head. It is worthy of observation, that in most cases the principal locality of the vascular turgescence may be tolerably well ascertained by a very simple process; that of applying our hands to opposite parts of the naked head. A competent physician, accustomed to this duty, will be able, in a few seconds, to fix on the principal seat of the vascular turgescence, about to become established in any given case of acute hydrocephalus. By means of his right hand and his left—instruments which he always carries about him, and without

which he never visits a patient, he has it instantly in his power to arrive at an accurate practical conclusion relative to this most important point of practical inquiry. All impediments to this investigation, as of hats, caps, excess of hair, etc., must of course be partially or wholly removed, as the case may indicate, before the facts to be ascertained could be finally and confidently reported upon. The fact, or facts, here supposed, once carefully ascertained, there would be left no room for doubt, nor for a difference of opinion. There would be no room left for any indecision or uncertainty ; nor for want of straight-forwardness of any kind on the part of a competently well informed practitioner. He would be able to state his opinion, and his reasons for it, with such an air of sincerity and of certitude of conviction, as could not fail to ensure for him the willing belief and confidence of all parties ? And why should an upright and candid physician ever feel it his interest to conceal and withhold from his patient's friends the actual facts of his case. Any gentleman who cannot perform this duty well and satisfactorily, whether for want of practice or for want of tact, (I think it is frequently the latter,)

should call to his assistance the experience and tact of a brother practitioner, to say nothing of his other qualifications, experienced on a larger scale than himself. The precise temperature of a child's head, when the subject of acute hydrocephalus, is ascertainable, it is well known, by a small pocket thermometer. But if the fact in question cannot be ascertained sufficiently accurately for all practical purposes without it, I fear it will be of no great use to entrust the destinies of the patient to the issues of such merely artificial contrivances.

But we will next suppose the fact of the existence of too much heat of the patient's head already ascertained. It might be a state of excessive temperature of the head affecting chiefly the occiput, or the forehead, or some special locality of one or of both sides of the head : for in a certain proportion of cases the excess of temperature is confined to a particular part or parts of the head.

We have next, as a matter of course, the best adapted remedy for the reduction of such excess of temperature to seek. For many years I was under the necessity, in order to accomplish this object, to make use of bullocks' bladders charged with

cold fluids ; such as iced water, and other solutions of water impregnated with a variety of salts, vinegar, etc. These impregnations were simply employed to lower the temperature of the water. Of late, I have laid aside this troublesome and noisome form of the practice, in consequence of accidentally learning that the house of Mackintosh and Co., of Charing Cross, have succeeded in supplying the public with perfectly water-tight water-cushions.

The mode of using this very convenient implement is to charge a cushion of this description to the extent of its entire capacity with the intended fluid, and immediately to allow one half of the whole fluid contained in the cushion to escape ; and then suddenly to stop and to secure the valve so as perfectly to prevent the escape of any more of the cold fluid, and at the same time to bar all intrusion of atmospheric air. The cushion will then contain half its capacity of an intensely cold fluid, and no air. The little patient's head is to be laid with its occiput and nape of neck to repose on the middle of this cushion ; which will have the effect of rapidly reducing the excessive heat of the head. The rapidity of this change of temperature will bear a

direct proportion to the morbid excess of heat of the child's head, and the low degree of temperature of the iced water or other cold fluid within the cushion. The fluid contents of a cushion thus employed in a case of extreme phlogosis, will be converted into a perceptible degree of warmth in less than half an hour ; as I have often very distinctly ascertained : and this will make it necessary to recharge the cushion with a fluid of reduced temperature, as used in the first instance : and these changes of fresh fluid in the cushion will become repeatedly necessary in proportion to the rapidity, or the contrary, of reduction of the excessive temperature of the child's head.

As long as the head shall continue the subject of the excess of heat in question, so long the infant, if conscious, will hail the approach of a newly-charged cushion ; whilst, on the contrary, it will express dislike of any interference with its previous state of repose, as soon as it will appear to anticipate a reduced change of temperature of its cushion with alarm. This will be an indication for suspending, at least for a time, the use of the cushion ; or perhaps, as I have observed in many cases, for laying it aside

altogether. The cushion must be used, or its use resumed pro re nata ; as the excessive accumulation of heat might or might not return. I wish especially to recommend to the attention of the profession the universal adoption of Mr. Mackintosh's water-cushions in all cases of acute cephalic affections. Their employment for the reduction of excessive temperature of very young subjects of acute hydrocephalus, forms a most important addition to our power over the issues of that formidable disease.

#### OF THE USE OF BLISTERS AS A REMEDY FOR ACUTE HYDROCEPHALUS.

I have not a high opinion of the use of blisters as a remedy for acute hydrocephalus ; and as a first measure, and resorted to without a previous ample abstraction of blood, I have good reason to believe, that the use of blisters might be attended with a great aggravation of the symptoms. Some years ago I had the opportunity of witnessing the practice of an extensive ophthalmic hospital, and had occasion to observe, on a considerable scale of examples, that whenever blisters were applied to the temples, in recent cases of acute inflamma-

tion of the eyes, before ample general bleeding had been premised, they scarcely ever failed to increase the intensity of the inflammation ; whereas, on the contrary, when venesection was made available as a first measure, and followed up speedily by emetics and active purgatives, it then appeared to me that blisters often materially co-operated with the other measures employed to mitigate the symptoms. The eye is an easily accessible and visible organ, and its comparative condition from day to day could always be easily ascertained and reported upon. The facts which then presented themselves to my attention made a great impression upon me ; and led to a considerable modification of my views in respect to the consecutive use of bleeding and blistering.

In the practice of others, I have often known blisters of various forms and sizes applied as a first measure, and without previous abstraction of blood. In such cases, I think I can speak positively that I never discovered that the blisters so employed produced any substantial good ; but, on the contrary, that they had often been chargeable with a positive exasperation of the patient's symptoms.

I am aware, indeed, that an assertion to this effect must necessarily be made with some amount of vagueness and uncertainty ; inasmuch as in the midst of a complication of dangerous symptoms it could scarcely consist with perfect candour, to attribute the exasperation of certain symptoms to the effect of any special remedy, rather than to the fatally progressive nature of the malady itself.

Should it be thought advisable to apply blisters as a second measure in the advancing progress of the disease, and subsequently to an ample abstraction of blood, I would advise them to be applied to the parietal regions of the head, and to be made of sufficient size to cover large tracts of the head on both sides. The surface of the occiput would be wanted for the application of cold, that being the part of the head to be laid on the cushion of cold water, as advised in a foregoing section ; whilst the forehead and sinciput, generally, would be required to remain unvesicated for the purpose of having those surfaces constantly bathed with cold evaporating lotions. I scarcely need to observe, that the entire surface of the head must be closely shaved before cold

can be advantageously applied either to the sinciput or occiput.

#### OF THE USE OF MERCURY IN THE TREATMENT OF ACUTE HYDROCEPHALUS.

Mercury, it is well known, is a medicine of no little importance in the treatment of inflammatory diseases. As a remedy for acute hydrocephalus it has been recommended as a cholagogue, a purgative, and as a power capable of repressing inflammatory action. As a purgative, I am in the habit of recommending a combination of two or three grains of calomel, and sometimes twice that quantity, with six, eight, or twelve grains of jalap, according to the age of the patient, as soon as the sickness shall have ceased after the operation of the emetic, exhibited as prescribed in a preceding section. To prevent uneasinesss and restlessness from griping, I seldom omit the addition of a few grains of ginger. In cases of known obstinate constipation, I have sometimes considered it useful to add a quarter or half a drop, and even more, when authorized by the age of the patient, of croton oil.

At the commencement of the disease I consider it a matter of great importance to obtain a

state of perfect freedom of the bowels ; which should include an early, and an effectual removal of all scybalous accumulations.

Another indication for the use of calomel is its remarkable competency, beyond all other known powers, to act vigorously as a cholagogue or a purgative of the liver. It frequently happens that suspension of the action of the liver is an early accompaniment, and in no small proportion of cases a predisponent cause of the recognized symptoms of acute hydrocephalus. Lienteric or clay-coloured alvine evacuations are often enumerated among the first symptoms of a head affection. The state of the liver, under such a condition, is obviously one of suspension of its action, or, in other words, of great obstruction of its circulation. When suspended as to its action, or much obstructed as to its circulation, what then should become of the great quantity of blood which thus must be necessarily withdrawn from its vascular tissues ? Whither more likely can it be determined than to the vessels of the head ; which already, according to our theory of the disease, must be considered to be in a state of extraordinary distension and

turgescence. To ensure the brisk action of calomel as a cholagogue, it would be best, in most cases, to exhibit it pure—that is, without any combination with it either of jalap or of any other active purgative. For this purpose calomel should be exhibited in doses of from one to three grains, every three hours.

Nevertheless, the state of the bowels should not be forgotten as to freedom, and it may frequently require the exhibition of purgatives of great activity to ensure a sufficiently frequent evacuation of their contents. Connected with this method of exhibiting mercury in conformity with its several indications, we arrive speedily, in many cases, at our third indication for its use ; that of exciting an action of the salivary glands with a view to the subduction of an inflammatory condition of the vessels of the head. This power of mercury over the human system is frequently called its specific action ; of which it is not now necessary to go into the explanation. When exhibited to the point of perceptibly producing this effect, the action of mercury is a powerful deobstruent, and an equally powerful resolvent, of inflammatory action. In many cases

of hydrocephalus the absorbents are observed not to be very active in taking up mercury and transmitting it into the system ; and we cannot always be certain, even when given in pretty large quantities, of its being actually conveyed into the circulation through the medium of the absorbents. It, moreover, has sometimes occurred that calomel has been exhibited rapidly, and in full doses, for a given period, that it has suddenly and unexpectedly been determined to the mouth with more than ordinary violence, and there produced such ulcerations, and such havocks of destruction of different tissues, as have ended in the death of the patient. Calomel, therefore, in full doses, requires to be exhibited with great discretion and constant advertence to this specific and inconvenient property of the medicine. The few cases of recovery from acute hydrocephalus which we find recorded as having taken place in the absence of early bleeding, are, I think, principally, if not exclusively, to be attributed to this constitutional action of calomel as a resolvent of inflammatory action. But this power is rarely exerted to the extent of saving life. I never, myself, depend upon it ; and, indeed, I seldom use it at all, in respondence

to its assumed influence as a resolvent of inflammatory action, excepting as an auxiliary of the lancet, or as an almost hopeless substitute for its use, when considered too late to have recourse to adequate repeated abstractions of blood with any considerable hopes of a successful issue. On the whole, I look upon mercury, exhibited in conformity with this last indication for its use, a remedy of less value, as to its power over the issues of hydrocephalus, than any of the other active measures which, I trust, I have sufficiently discussed in the immediately preceding sections. This power, however, is nearly the whole that can be possessed by our profession, if mercury be administered on the system, and agreeably to the practice of the late Dr. Cheyne, of Dublin, and his colleagues ; and I believe we may justly attribute the recoveries exhibited as the results of their few successful cases, principally, if not exclusively, to that mode of exhibiting calomel. The principal exception to this remark, was the seventh case, which was communicated by Dr. Edward Percival. That case was treated by considerable bleeding, amounting to sixteen ounces, taken by incision of the temporal artery, on the

second day after the invasion of the malady; and in two or three days subsequently, by the application of twenty leeches to the hepatic region. But having made the above statement in disparagement of the practice adopted by Dr. Cheyne and his colleagues, with the exception of the case just adverted to, it seems but right to put my reader in possession of the principal facts recorded in the published reports of the cases in question. As they occupy a series of years in point of date, I shall distribute them according to the consecution of the several years of their occurrence. Following the date of the year, I shall append the number of the case, as given in Dr. Cheyne's book, for the sake of easy reference to that production.

1801. C. 11, C. D., æt. 14. The hydrocephalus was not suspected till about ten days before the patient's death. There was no abstraction of blood in any form prescribed: the practice actually adopted, consisting principally of opiates and cretaceous medicines, was attended with no benefit. Death.

1804. C. 1. A. M., age not mentioned. The subject was a fair and delicate girl. A case of

simple congestion of the head, treated actively by mercurial purgatives.—Reported cured on the 16th of May, after its commencement on the 12th of the same month. See Dr. Cheyne's "Essays," p. 91.

1805. C. 2. p. 92. R. S., æt. 4, was languid and drowsy for about ten days; but was seized with active symptoms, such as vomiting, headache, slowness and irregularity of pulse, on the 12th of May. The medicines employed were mercurial purges with jalap. The case was reported cured on the 18th of May.

1805. May 12., C. 3. D. R., æt. 8, with dark eyes and complexion and coarse skin; a fine and intelligent boy. His case was treated principally by calomel, given in the quantity of two grains every four hours, and by the application of five and six leeches once or twice repeated to the temples. He was first slightly, but afterwards considerably, salivated. He was convalescing satisfactorily; when on the 15th of May he sustained a relapse. He eventually recovered by the use of the same means after a severe salivation. The concluding report is dated on the 8th of July.

1805. June. C. 12. R. A., æt. six. This

boy, for more than a year, had not enjoyed good health.—Death. No dissection.

1805. C. 8. D. C., æt. 8., a boy at school. On the evening of the 6th of July four large leeches were applied to the temples, and on the 7th it is reported that the bleeding from the leeches continued four or five hours. On the evening of the 8th it is stated that four more leeches were applied to the temples ; inasmuch as in the afternoon he had complained of his head. The pulse was then at sixty, and quite regular. No report is afterwards given of further bleedings either by leeches, or in any other way. The patient died. The dissection is given in p. 115 of Cheyne's "Essays."

1806. C. 10. Relapse of the patient J. M., dated originally May the 12th, 1804. She became a patient again in December of the present year. No age is mentioned in either history. On the 4th of December a mixture was prescribed, with the tincture of jalap, with no bleeding. On the 6th, the 10th, and the 11th, the patient was visited ; but no abstraction of blood in any form was prescribed. Death took place on the 11th ; but no dissection was allowed.

C. 13. The year is not stated (it probably occurred in 1805). A. S., æt. two and-a-half, a fair child, of a phlegmatic temperament, was seized with convulsions, etc. On the 9th of December, and on the 11th of the same month, and not before, four leeches were applied to the temples, and a blister to the scalp. No other useful treatment was adopted. Death. No dissection.

C. 14. Probably in the year 1805, which, however, is not stated. The report of this case is very unsatisfactory. The disease existed late in September, and the patient died on the 14th of October.

1806. C. 15. A girl about seven years of age became the subject of acute hydrocephalus, which ended in convulsions and death. The case is so feebly drawn up as to present no points of interest ; it being scarcely deserving of criticism.

1806, June 30th. C. 6. Communicated by Dr. Kellie. Forrest Fair, a boy of between seven and eight years of age. Certain predisponent symptoms were observed during the two last days, such as headache, pains of the abdomen, moaning during sleep, picking of the nose, grinding of the teeth, vomiting, with flushing of the face, great heaviness and dulness of the eyes,

the adnata being suffused and slightly inflamed, skin hot, abdomen tumid, and bowels costive. p. 130. The medicine prescribed consisted of two grains of calomel and twelve of jalap, to be repeated, if necessary. On the 1st of July there occurred great drowsiness, with severe pain of the head. On this day, for the first time, four ounces of blood were taken from the foot. On the 2nd of July eight ounces of blood were taken from the arm. Mercury was carried to salivation during the progress of the treatment. Symptoms of a very formidable character presented themselves during the greater part of the month of July, but on the first of August the patient is reported as being convalescent, and on the 5th as having actually recovered.

1806. C. 4. D. M., æt. 4, a fine looking boy, became the subject of treatment on the 26th of December; but he had vomited on the 25th, and been the subject since of great drowsiness, heat of skin, much pain of the head, with intolerance of light. Two grains of calomel were ordered to be taken three times a day, together with eight drops of the tincture of digitalis. On the 27th of December leeches were again applied, but their

number is not mentioned ; and subsequently, on the 6th of January, more leeches were ordered, but without any statement of their number. During the further progress of the treatment there were exhibited calomel, blue pills, tincture of digitalis, blue ointment, blisters, with a variety of purgative draughts. The treatment appears to have been very complicated ; but on the 10th of January the patient was reported as gradually improving, and on the 16th he was stated to be without complaint.

1807. C. 5. April the 15th. A. S., æt. three years and six months, of fair and delicate complexion, and subject to habitual looseness of the bowels, has this day had rigors, followed by some delirium, heaviness of the eyes, and pulse of 120 in a minute. The other symptoms are a white tongue, brows contracted, constipation of bowels, startings during sleep, with much fever. On the 15th, a prescription, ordering calomel, with other purgative powders, was left at the patient's residence. On the 16th, six leeches were ordered to be applied to the temples. On the 18th, leeches were again advised to be applied, without stating the number. On the

19th, twelve drops of digitalis were directed to be exhibited three times a day, with instructions to add one more drop to each dose. On the 21st and on the 26th, leeches were ordered to be again repeated, and on the last day a large vesicatory to the forehead. On the 29th, ample blisters were ordered to be applied to the temples. On the 1st of May, some improvement was declared to have taken place ; and on the 4th, medicines were discontinued. Recovery.

1807. C. 9. Communicated by Dr. Kellie. J. M., aged seven years and eight months, became the subject of acute hydrocephalus on the 6th of July, when he complained much of his head, which he was quite unable to hold up. He was treated with occasional doses of calomel, consisting of two grains each, and of jalap, fifteen grains each, to be given on the following morning. On the 8th of July, six leeches were applied to the temples ; and on the 9th, when it was reported the leeches had bled well, they were ordered to be repeated. On the evening of the 10th, two leeches were ordered to be applied to the forehead. The pulse was then noted as being 112. No further bleeding was advised. The patient died on the 17th. No dissection.

1814. Jan. 20. C. 16, of a boy six years and a half old : said to have been seized on the 8th day of fever, with symptoms of hydrocephalus. Death took place on the 28th of January. No dissection.

1814. March 6. C. 17. æt. 12. This case was neglected, and therefore was not made a subject of treatment for some time before the 6th of March. On that day twelve leeches were applied to the temples; but a fine boy of twelve years of age ought to have been bled to fainting from the arm, without delay. On the 12th of the month he was, indeed, bled from the arm to ten ounces ; but then, after the loss of six entire days the v. s. could not have been expected to have been of much service. Ten ounces was, moreover, too small a quantity of blood to have been abstracted, even if the operation of blood-letting had been more opportunely performed. The case proved fatal.

1814. Oct. C. 18. An infant of seventeen months old. This case was probably not recognized during the earlier days of the disease. When it was, it was treated by the usual routine of applying a few leeches to the temples, and of

exhibition of medicines, consisting of calomel, James's powders, jalap powders, opium, powder of hydrarg. c. creta, mixtures with squills and senna, with all manner of miscellanies. Final recovery, after extreme danger.

1815. May 12. C. 19. A boy of five years old, after a severe blow on his forehead, became the subject of symptoms which indicated some danger of a head affection. He was bled to six ounces from the arm, and treated, in other respects, on the general principles of Dr. Cheyne's school; and although the bleeding was defective in quantity, it nevertheless laid the foundation of an eventual recovery subsequently to free purging.

1815. July 13. C. 20. A young gentleman of thirteen years of age, after bleeding from the temporal artery, and then from the arm, and subsequently by leeches applied to the temples, and by miscellaneous medicines, consisting chiefly of calomel, antimonial powders, and purgatives, recovered. The case terminated favourably, after the duration of about a week.

1815. July 15. C.—M. G. æt. 17. A case of successful treatment by bleeding from the tempo-

ral artery, and by the subsequent application of twenty leeches to the hepatic region, communicated, as already stated, by Dr. Edward Percival.

The above cases, of which the number amounts to twenty, were treated by Dr. Cheyne and his friends at Dublin, chiefly by calomel and jalap, and by calomel and digitalis with and without opium, when the specific effects of calomel were especially wished for. Of the entire number of twenty, ten are recorded as examples of recovery, whilst the remaining ten proved fatal. The first case of recovery, however, died of a relapse in two years afterwards. C. 4 is stated as one of somewhat imperfect recovery. C. 18 was very long under treatment, and for many weeks ballancing between life and death. C. 7 was an example of recovery in consequence of a pretty considerable bleeding from the temporal artery, and in two days subsequently by the application of twenty leeches, and after that of vesicatories to the hepatic region. This case is published as a communication from Dr. Edward Percival who superintended the treatment. All the remaining cases, including the first of the recoveries, eventually proved fatal. The above

cases, be it observed, of Dr. Cheyne, associated in the professional management of several of them with his professional friends in Dublin, were distributed over a period of fourteen years. It is a matter therefore of no very difficult inference, in my opinion, that the recovery finally of nine out of the twenty cases recorded, furnishes no mighty evidence of a successful treatment of acute hydrocephalus. The case of Dr. Edward Percival reduces the number of successful cases which occurred in the practice of Dr. Cheyne and his other friends to the number of eight examples of the disease in fourteen years ; a proportion of successful treatment scarcely worthy of Dr. Cheyne's pretensions and of the high encomiums passed upon his works, at the several periods of their publication, for the striking peculiarity of his views, and the highly practical tendency of his labours.

After enumerating in the way of recapitulation some of the principal circumstances by which the parents, or other friends of patients, may be able to recognize indications of danger before the actual advent of hydrocephalus, I propose to conclude the present volume with the patholo-

gical history of a limited number of cases which occurred in the practice of University College Hospital in the months of April and May of 1839. As they are consecutive cases, and all of them cases which came under the cognizance of the hospital within the dates above-mentioned, the reader will have the means of forming a pretty correct opinion of the proportion of that sort of practice which presents itself, unequally indeed, at different periods of the year, and of the success of the treatment of acute hydrocephalus at that important school of practical medicine.

CIRCUMSTANCES INDICATIVE OF DANGER OF ACUTE HYDROCEPHALUS, WHICH SHOULD OPERATE AS A WARNING TO PARENTS AND GUARDIANS TO TAKE THE ADVICE OF THEIR MEDICAL FRIENDS IN GOOD TIME.

1. Convulsions during the period of teething is a source of great danger, and is one of the most frequent predisponent causes of acute hydrocephalus.

2. Difficult dentition, without convulsions, may be identified with a state of over-fulness of the tissues of the brain, which not unfrequently

predisposes to convulsions, and likewise, therefore, to acute hydrocephalus.

3. Added to the above state of things, a perceptibly increased temperature of the head is an indication of the actual commencement of the disease itself, but in many cases curable at that incipient stage of the malady.

4. Children of from seven or eight months to the age of three years inclusive, who are liable to a convulsive variety of difficult breathing during the moment of awaking from sleep, and frequently at other times, followed usually by a loud cry commenced with difficulty and struggling, are especially liable to be seized with convulsions : and convulsions, as we have already seen, may, at any time, lay the foundation of a predisposition to hydrocephalus. The convulsive affection of the larynx here alluded to, has of late years been technically called laryngismus stridulus. I hope in the course, perhaps, of the next year, to submit to my professional friends and the public generally some practical observations on the subject of convulsions of young subjects.

5. Sickly, peevish, and discontented children, never looking happy, not thriving at the mother's

breast, nor by the spoon-meat provided for them ; children more than usually grave, morose, or miserable in the expression of their countenance, are frequently sufferers either from want of food, or from being compelled to subsist upon sloppy, gross, or otherwise indigestible food : all such children are more or less liable to the invasion of acute hydrocephalus.

6. Accidents from falls with the head foremost, or from violent application of force to the skull from hard bodies, in whatever position the head may be at the time, should excite the earliest attention of parents. Apparently slight injuries and contusions should be carefully examined, and their consequences regularly and anxiously watched, and, if necessary, reported without loss of time to the medical attendant of the family.

7. Children of a sanguineous temperament, and of fine transparent complexions admitting of the cutaneous circulation of the face and neck to present itself visibly to the eye, accompanied by a disposition to great activity both of mind and body, are usually considered especially liable to acute affections of the head.

8. Scrofulous children usually mismanaged as

to their diet during the earlier years of their growth are more liable to become the subjects of acute hydrocephalus than their healthier little neighbours of the same age.

9. Severe eruptions of the skin, such as those of scald heads and small-pox, measles, impetigoous affections, etc., ought to excite the earliest attention of parents to get them speedily and properly cured. Intense chronic affections of the common integument are frequent predisposing causes to acute hydrocephalus.

10. The results of severe and long continued diseases, such as hooping cough, measles, scarlet fever, etc., are known frequently to predispose to acute hydrocephalus. In many cases the results of the diseases in question furnish evidence of their not having been well and efficiently treated. Lingering remnants of acute maladies and a long duration of ailments of young children greatly enfeebled in consequence of them, should not fail to engage the attention of parents, guardians, superintendents of school establishments, and all other persons who may have the health of young people entrusted to them. The circumstances severally alluded to are highly predisponent causes of acute hydrocephalus.

11. When children of a tender age become subjects of great vigilance, or of much loss of sleep for several successive nights together, such a state of things cannot exist excepting as an effect of some formidable cause; and the cause to be apprehended will, in many cases, prove to be a state of turgescence of the vascular tissues of the brain, frequently indicated and accompanied by an acutely severe pain of the head.

12. A state of great sleepiness or stupor is another circumstance which should excite the instant attention of parents to the duty of obtaining early professional advice. It should equally be considered a cause of overfulness and of excessive action of the vessels of the head with obstinate vigilance.

13. Frequent alternations of a severe headache with sickness and vomiting is an ordinary symptom of acute hydrocephalus already commenced; but admitting, in some cases, of being arrested by immediate and vigorous treatment.

To afford further assistance to the parent or medical friend towards an early recognition of the first actual symptoms of hydrocephalus, the rea-

der's attention is requested to the following practical notices. They are early symptoms of cases which have actually existed and terminated fatally for want of opportune or in consequence of incompetent, treatment. They have long since become the subjects of recorded pathological history.

1. A case of hydrocephalus, in consequence of the fall of a maid servant with a healthy child of eight months old in her arms, down a flight of stairs, the result of which was, that the child's head sustained a dangerous concussion. The maid speedily recovered, but the child died of acute hydrocephalus.

2. A child of five months old had been the subject for a long time of a diarrhoea, which was not cured by the remedies prescribed. In consequence of laying aside the use of all medicines the diarrhoea suddenly ceased, and acute hydrocephalus almost immediately supervened, and carried off the patient.

3. Several cases are alluded to of fatal events of acute hydrocephalus in consequence of unfortunate vaccinations. I am happy to say that fatal cases from that cause have not occurred within my immediate experience.

4. A.D., four years of age, was seized with acute inflammatory affections of his neck, side of face, and the muscular tissues of the nape of the neck, accompanied by an inflammatory affection of his tonsils, uvula and velum pendulum palati. During the intensity of these inflammations, the ordinary symptoms of acute hydrocephalus supervened. The little patient eventually died.

5. W. H., five years old, became suddenly the subject of a catarrhal gastric fever, which was followed very speedily by the unquestionable symptoms of the stage of turgescence of acute hydrocephalus. It proved a case of great intensity of that disease, which ended fatally.

6. J. E., eighteen months old, was the subject of rickets for a twelvemonth. To this condition of an enfeebled state of constitution, there followed a severe diarrhoea of a month's duration ; and of this there supervened as a consequence, the usual symptoms of acute hydrocephalus, which terminated fatally.

7. J. M., aged seven years and eight months. Two of the other children of this family had died in their earliest infancy of hydrocephalus. During the medical attendant's first visit, the

case under consideration was supposed to have become the subject of the same affection. The young gentleman complained much of his head, which he seemed quite unable to hold up. Although dressed, he was lying on two chairs, and was seized with repeated efforts to vomit when made to sit up. The pain of his forehead and temples, he described as exceedingly severe. His eyes presented a languid, heavy, and suffused appearance. His eyebrows were kept strongly knit. His tongue was white and furred. His skin was hot, and his pulse beat at the rate of one hundred and twenty strokes in a minute. The bowels were costive, and he voided much turbid urine, which upon cooling deposited a great quantity of a chalky coloured sediment. This case ended fatally.

8. J.M. again became my patient in 1806. She had not recovered a good state of health after her former illness in May 1804. During the intermediate period I was very often consulted about her complaints. She was frequently the subject of attacks of scrofulous ophthalmia, of swellings of the lymphatic glands in her neck, of disordered states of the abdominal viscera, of considerable en-

largement of the abdomen, and of the occasional occurrence of a severe diarrhoea, when her alvine evacuations were usually of a dark colour, exceedingly offensive and putrid. When suffering, on one occasion from the severity of these symptoms, she became the subject of a fatal acute hydrocephalus.

9. R. A., six years of age, had not enjoyed good health for a twelvemonth. In July 1804, he had hooping cough, which left an extreme delicacy of constitution, and he was long without appetite. After the cold winter weather set in, he was affected all over the body with circumscribed tumours of about the size and shape of a nutmeg, which apparently formed in the cellular membrane, and which slowly suppurated, leaving scrofulous sores. One day, upon remarking that there was something peculiar in his look, his mother observed that she was afraid he was losing his sight. On examining him, I found that the pupils did not contract : one side was paralytic. He did not complain of any pain in his head, but in ten days he was dead ; during that interval most of the symptoms of acute hydrocephalus were manifested.

10. A girl, of about seven years of age, who had been labouring under a continued fever, with morning remissions, with which three children in the same lane were affected, appeared to me to have got a crisis. She became cool on the fifteenth day of her fever. Her tongue was clean. On the eighteenth day I called again, and discovered my mistake. Her pulse was 80. Her pupils were dilated, and the iris was paralytic. She was blind and insensible. In this state she lay three days, and died after being in convulsions for some hours.

11. A remarkably intelligent, pale, fair-complexioned boy, and of rather a delicate texture of skin, became the subject of fever. During my first visit he was in the eighth day of the fever described. His bowels were then irregular, and his stools of a dark green colour. On the preceding day he had complained of his head, of which he had, indeed, spoken at the commencement of his febrile attack. There was obviously, during this visit, a slight squinting, with intolerance of light. He dozed much, awoke collected, complaining of much pain of his head, especially over the eye-brows, and of some giddiness. The

pulse was unequal ; at about 96. Hydrocephalus became unequivocally established, and the patient eventually died, under circumstances of great misery.

12. A promising boy, of about twelve years of age, became the subject of a severe attack of fever, with disordered bowels. He complained of intense pain and weight both of the forehead and of the vertex. He leaned on his forehead to ease the weight of it. His face was flushed ; his eyes were red, and suffused with moisture ; his pupils were large, although his sight was yet perfect. Noise and light greatly distressed him. He sighed deeply and frequently. He complained of frequent lancinating pains of the shoulder, nape of the neck, muscles of the back and loins, and even sometimes of those of the lower extremities, which alternated with that of the head. His skin was dry and burning. He was occasionally thirsty. His pulse was about 70, but increased to 100 on the least motion. His abdomen had been tense for some days ; during which he had had no relief from his bowels. His urine was scanty and high coloured. With very little sleep, he was constantly in a state

of agitation, frequently changing his position from the bed to the fire-side, and from the fire-side to the bed again. In the further progress of the case he eventually became the subject of the most formidable and characteristic symptoms of acute hydrocephalus. He died in two days after the accession of total blindness.

CASES OF ACUTE HYDROCEPHALUS WHICH WERE  
MADE THE SUBJECTS OF TREATMENT AT UNI-  
VERSITY COLLEGE HOSPITAL, DURING THE  
MONTHS OF APRIL AND MAY 1839.

Augustus Horn,  $5\frac{3}{4}$  years old, was admitted an O.P. of University College Hospital on the 17th of April 1839. Complexion fair. Skin soft. Was seized first this morning, having been previously in perfectly good health, with drowsiness and throbbing pain of the back of the head : at the same time his face became flushed, and the skin generally was of higher temperature than natural : the forehead is hot upon the application of the hand to it ; and when the boy attempts to stand he says he feels giddy. The pulse beats at the rate of 140 strokes in the minute ; the bowels, according to the statement of the mother, are habitually costive ; but this morning they have been

purged by a senna draught, which she herself exhibited in the absence of all medical advice.

Treatment. V.S. from the jugular vein carried to fainting : an emetic, containing half a grain of tar-tarized antimony and eleven grains of the powder of ipecacuanha, was exhibited immediately after recovery from fainting in consequence of the bleeding ; and on the following morning a purging powder was administered, consisting of four grains of calomel, and twelve grains of jalap. This child sustained a similar attack, as we find reported, three months ago, which was removed by cupping from behind the ears, *to fainting*. He then, as now, became a patient of the Hospital. The mother states that heretofore she had lost three children by acute hydrocephalus, but that in those cases, not one of the subjects of them being a patient of the Hospital, the abstraction of blood had been effected in all the cases by leeches. On those occasions the mother states that the several children had died on the third or fourth day of the disease. Visit at the patient's residence on the 18th. The patient was much better in all respects, after having enjoyed some natural and uninterrupted sleep. The bowels

have been freely moved by the calomel and jalap exhibited in the morning. From this time forward the case made good progress, and was dismissed cured on the twenty-fourth.

Upon the 22nd of August, the above Augustus Horn was again seized by an attack of similar symptoms with those which he had experienced in April, and for which he was presented by his mother at the Hospital. He then also complained of giddiness, and inability to stand or walk on that account, and of throbbing and shooting pains of the head, and more especially of the forehead. The same treatment was again adopted : but the case proving more obstinate than on the former occasion, required a repetition of the measures used at the onset of the attack. This time the head was shaved, and the cold water pillow was had recourse to, and four grains of hydrargyrum c. cretâ, exhibited every three hours ; and this plan was continued until the symptoms had entirely yielded. In about a fortnight from the date of this second attack, the child was dismissed, perfectly cured.

John Rumble, 1 year old, was admitted an O.P. of University College Hospital on the 20th of

April 1839. This child had begun to droop and look languid and sleepy early in the afternoon of yesterday. In the evening he became feverish and flushed in the face, and passed a very restless night, often screaming, and repeatedly putting his hands to his head, and rolling it from side to side on the pillow. At present the head is hot to the feel, as is also the skin generally. The pulse is full and hard: the tongue is very white and loaded, and there is extreme thirst. Treatment:—Abstraction of blood from behind the ears by cupping, to five ounces, which produced fainting. This was followed up by the exhibition of an emetic, consisting of half a grain of tartarized antimony and ten grains of the powder of ipecacuanha. A purgative, consisting of three grains of calomel, ten grains of jalap, and two of powdered ginger was exhibited in about four hours after the emetic. Several of the symptoms of the former phlogosis having returned after the lapse of some days, this child required a second cupping to five ounces more. From that period the convalescence advanced prosperously, and the patient was dismissed cured on the 6th of May.

Caroline Newman, eight months old, was admitted an O.P. of University College Hospital, on Monday the 22nd of April 1839. This little patient had a wide and intensely distended fontanelle from chronic hydrocephalus of three or four months standing. She now has a ricketty shaped head and a sickly look. She began to be fretful on Friday, the 19th, having previously been lively and cheerful, notwithstanding the chronic enlargement of the head. The present symptoms are a pyrexia, attended with a screaming and drooping of the head; a rolling movement of it from side to side, on the mother's lap; a lifting of the hand to the side of the head, as if to complain of pain of it; great heat of the head; much restlessness and fretfulness. The pupils were of the natural size, contractile indeed, but not unusually contracted. Treatment: Abstraction of blood was ordered from behind the ears to four ounces; this quantity of blood being considered sufficient for a child of a ricketty constitution, and of an unusually sickly appearance. Calomel was ordered to be administered in doses of two grains each, every six hours. On the following day, Tuesday, the 23d of April, the

child was found in many respects much better. It was lively and smiling during the visit, with much less heat of the head, which was also observed to be held erect. The mother reports that the rolling of it from side to side has not returned since the cupping. The bowels have been once relieved this morning, after having been acted upon three times yesterday evening. Visit on the 24th. The child is fretful, but without any rolling of the head, and without any movement of the hand towards it. By reason of some increase of fever, an emetic, similar to the former, was ordered to be repeated and to be followed up by a purgative of calomel and jalap. Visit of the 27th : The little patient is become the subject of a vivid erysipelatous inflammation of the face, accompanied by fever and much restlessness. For the removal of the erysipelas a saturated solution of the nitrate of silver was applied to the erysipelated surfaces. On this occasion ten grains of the cinchona bark were ordered to be exhibited three times a day, and two grains of calomel every six hours. Visit of the 1st of May : The erysipelas has disappeared, and the child has resumed her natural appearance and has enjoyed

her accustomed amount of sleep. There is not, at present, any morbid heat of the head, but the anterior fontanelle is still elevated. The bark was continued for a week or two longer, and the child was restored to its former state of health. The chronic affection still remains.

William Henry May, nine years of age, was admitted a patient of University College Hospital on the 13th of May 1839. At an early hour of yesterday, this boy complained of severe pain of his forehead: the mother, at the same time, perceived that that part of the head was hotter than any other tracts of it. It is now very hot. The forehead is prominent, and the child exhibits a state of imperfect general health. The expression of the eye is tolerably good, and the pupils contract naturally. The tongue is slightly loaded, and the mother states that the secretions from the bowels are black and offensive. The patient has been sick, and has frequently vomited since yesterday morning. The pulse is now 120, but not very strong. A severe headache is complained of. The mother states, that she has lost four children by water in the head, at the ages respectively of eleven weeks, one year, two years,

and three years and a-half old. Our present patient was ordered to be cupped behind the ears to full fainting, and to take half a grain of tartarized antimony, and fourteen grains of the powder of ipecacuanha, immediately after his recovery from the fainting to be produced by the cupping. A purgative, consisting of three grains of calomel, was ordered to be taken on the following morning. Visit of the 14th of May: Ten ounces of blood were taken from behind the ears on the afternoon of yesterday, after which the patient was very sick and fainted ; and after the lapse of about half an hour he fainted again. The emetic was taken as directed ; and this morning the patient has a much brighter expression of countenance. There is, however, still some pain of the head, with præternatural heat of it ; but much less than before the bleeding, as the patient himself states. The bowels have been once opened since the exhibition of the powder this morning ; the fæces are represented as having been of a dark, slimy, offensive character. There was considerable restlessness in the night, but much less than during the night previous to the bleeding. The patient was ordered, during this visit,

to take two grains of calomel every three hours, until further orders. From this time he recovered rapidly, and was discharged, cured, in a few days.

Henry Hays, fifteen months old, was admitted an O.P. of University College Hospital on the 14th of May 1839. This little patient was seen a few days ago on account of severe teething, without, however, being accompanied by any symptoms of a head affection. Scarification of the gums was considered as being alone required, and was, at the time, effectively performed. The mother, however, now states, that yesterday morning she observed that the child's head was unusually hot ; that he threw his head back, and kept it rigidly fixed in that position for some time ; and that he made this movement repeatedly ; and also put his hand to his head, and rolled the latter on the pillow, and ground his teeth. The child's bowels are generally constipated, although the motions are represented as being green and slimy. There is no drowsiness ; but, on the contrary, extreme restlessness, with much increase of the heat of the head, and especially of the occiput. The pulse is full, hard, and velocious. The patient has cut six incisor teeth :

no others are pressing. The head is large. His limbs are tolerably firm. The mother states that she had had another child similarly attacked some time ago, who, however, was cured at this Hospital by a bleeding from the jugular vein. Cupping from behind the ears was ordered to four ounces, or more if found necessary, to produce fainting. An emetic consisting of half a grain of tartarized antimony and ten grains of the powder of ipecacuanha was directed to be given immediately after recovery from the fainting; to be followed up by a purgative consisting of three grains of calomel and ten grains of jalap, to be taken in four hours after the last operation of the emetic. Visit of the 15th of May: The improvement is marked in a better expression of the countenance: the little patient however still grinds his teeth, but only during sleep. The head is still too hot; although he rested better than the previous night. The bowels have not yet been moved this morning. Second visit at half past nine in the evening, in consequence of the child having been seized with two consecutive paroxysms of convulsions: The head is now excessively hot; but more intensely at the back part

of it than at the forehead. The extremities are also much raised in temperature. The gums were again well scarified, and the outward incisor of the lower jaw of the left side protruded immediately in consequence. Cupping was again ordered to three ounces, or more if necessary. From this time forward the patient convalesced rapidly, and the case soon terminated in perfect recovery.

I am indebted for the reports of the above cases to my son, Mr. John Hall Davis, who was my principal clinical clerk at University College Hospital at the period of their occurrence.

Such are some of the most frequent predisposing causes premonitory of more or less liability of young people, to become subjects of acute hydrocephalus; and such also is a selection of a few cases of the actual disease, which terminated fatally in consequence of their early symptoms not being duly recognized by the family and friends of the patient, or else in consequence of the same symptoms not being treated sufficiently early, or of not being treated with sufficient intelligence and vigour by the professional gentleman or

gentlemen consulted upon such occasions. That a fatal termination is an inevitable result of acute hydrocephalus, is abundantly disproved by the events of the hospital cases which have been just reported, as well as by those of all the cases, with very rare exceptions, which occur from week to week, and from year to year, in the practice of the same public institution. Under similar circumstances of early application and competent practical knowledge of the subject, precisely similar results may be expected to follow, and actually do follow, in private practice, as in that of the public institution alluded to. This fact admits of being satisfactorily attested by a host of my best-informed professional friends.

THE END.



OCTOBER, 1840.

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